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China's Environmental Security: Implications for US Interests and Opportunities for Military-to-Military Engagement

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PREFACE

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EXECUTIVE SUMMARY

US national security objectives in China and the Asia-Pacific region include social and political stability, and unhindered access to open markets. China's many environmental problems threaten its internal economic and political stability and its relations with other countries in the long run. Already, air and water pollution, flooding and other consequences of poor environmental management in China have created economic problems, social unrest and political tensions. In light of the country's rapid population and economic growth, its environmental problems will likely worsen. Because of their potential impacts on US interests, the US should actively engage China on environmental issues, using the opportunity to encourage greater attention to China's environmental problems and develop positive dialogue with the Chinese. Sharing clean energy technologies and jointly developing new environmental management techniques that reduce pollution and simultaneously increase energy efficiency are among the activities that yield advantages for both parties.

Military relations between the US and China are fragile, constantly fluctuating with changes in the diplomatic situation. Engagement between the Department of Defense and People's Liberation Army on environmental issues is one avenue for less contentious and more enduring strategic cooperation. Both militaries stand to gain from reducing the environmental impacts of their operations, furthering their understanding of the environment's role in national security, and improving their abilities to respond to natural disasters. Environmental cooperation will result in mutually beneficial exchanges of information and expertise. Besides the environmental benefits, engagement will also help the PLA in its quest to modernize and the DoD in its attempts to encourage the PLA to become more transparent. In addition, the overall level of confidence and trust between the DoD and PLA and between the US and China will increase through environmental dialogue. Activities between the DoD and PLA might include collaborative studies on the military and environment, joint training exercises and technology transfer. These programs may encounter difficulties, due to internal domestic politics or funding problems for example, but barring any major political or diplomatic catastrophes, environmental engagement can remain a productive and consistent component of DoD-PLA and US-China relations.

INTRODUCTION

China's environmental situation is poor and declining. On the whole, the government's environmental policies have been ineffective and there are no signs of this changing. Air and water pollution, deforestation and other environmental problems in China are noticeably affecting the country's social and economic welfare in a negative manner. Currently, environmental grievances are largely threatening stability at the local level but if the government continues to be unresponsive, they may grow to threaten China's stability at the national level. In addition to this, China's neighbors are also experiencing problems as a result of China's irresponsible environmental practices, which is affecting China's relationships with these countries.

US interests in China include stability and access to open markets. The United States would like for China to become a positive force among Asia-Pacific countries and in the international community. China's environmental security problems may compromise these objectives and thus the US has strong reason to engage China on the environment. Environmental cooperation between the US and China will benefit both sides, helping to mitigate China's environmental ills, aiding the US in achieving its security goals in China and the Asia-Pacific region, and simultaneously contributing to the countries' relationship.

Elizabeth Economy writes, "In this rather bleak political climate [between the US and China], the environment offers a fresh start."¹ The US-China relationship is controversial domestically in both countries and thus very fragile. There have been many events, such as the Tiananmen Square incident in 1989 and the recent NATO bombing of the Chinese embassy in Belgrade, that have soured US-China ties for long periods of time, greatly slowing diplomatic progress. The majority opinion in both countries is that engagement rather than isolation and hostility is the best path. However, because there are many security challenges, dialogue between the US and China is often centered on areas of contention. The environment serves as a less contentious, less volatile issue for engagement. According to many China experts, "dialogue and cooperation in the relatively value-neutral field of... environment could offer some welcome counterweight

¹ Economy, Elizabeth, "Painting China Green," *Foreign Affairs*, March/April 1999, p. 18.

to the disputes on human and intellectual property rights, Taiwan, Tibet, arms proliferation, and trade that currently dominate relations between the two countries.”²

Military-to-military engagement is an important dimension of diplomacy between China and the US. The environment is a good area for military cooperation. Engagement would address the harmful effects of military activities on the environment. For China and the US, it would also indirectly help increase transparency between their military organizations, clarify intentions and reduce the chance of miscues in tense times, and enhance mutual confidence and trust.

Chapter I describes China’s environmental security situation, and its impacts on US interests. It discusses the advantages of environmental engagement between the US and China. Chapter II focuses on military environmental engagement, addressing the many ways in which active cooperation on the environment would benefit the Department of Defense and People’s Liberation Army³, as well as the difficulties that programs would face. Following this are recommended activities for DoD-PLA environmental exchanges. Chapter III offers some conclusions.

² McElroy, Michael B., and Chris P. Nielsen, “Energy, Agriculture, and the Environment: Prospects for Sino-American Cooperation”, *Living with China*, ed. by Ezra Vogel, The American Assembly, (New York: 1997), p. 219.

³ In this paper, the term “People’s Liberation Army” refers to China’s military organization as a whole, including all of the military services and branches, not just the Army.

I. CHINA'S ENVIRONMENTAL SECURITY AND IMPLICATIONS FOR US INTERESTS

Part I. China's Environmental Security

A. ENVIRONMENTAL FACTS AND FIGURES

China is one of the world's most polluted countries. Its rivers, lakes, forests, farmland, and air all are in bad shape. Natural resources are in such dire straits that they are unsuitable for consumption, or even for sustaining life. A few facts and figures should suffice to outline China's environmental problems, and explain why it is imperative that they be cleaned up.

1. Problems in China

a. Air pollution

By many measures, China has some of the worst air pollution in the world. Beijing is the most polluted capital city in the world — the sky was shrouded in haze 265 days last year.⁴ Its air pollution is six times greater than that of New York City, and its emissions are nearly as great as those of Los Angeles, yet it has only one-tenth the automobiles. China's air pollution problems are not limited to Beijing alone: five of the world's nine most polluted cities are in China, and experts say that "500 major cities in China do not meet World Health Organization (WHO) air quality standards."⁵ This pollution is in large part due to the coal that China burns for energy. China has coal reserves for 1,000 years, and uses the coal for 75 percent of its energy needs,⁶ however the coal is high in sulfur and creates harmful air pollutants when it is burned. Besides smog and haze, these air pollutants cause acid rain, which falls over 30 percent of China's territory.⁷ The poisonous rain results in \$2.8 billion in damage every year,⁸ and

⁴ Muzi Lateline News website: <http://dailynews.muzi.net/cgi/lateline/news?p=30878&l=english>, "China's Capital has Worst Air Quality," June 1, 1999.

⁵ Frank, Aaron. "Solving China's Environmental Problems: Policy Options from the Working Group on Environment in US-China Relations," *Woodrow Wilson Center Environmental Change and Security Project Report*, Issue 4, Spring 1998, p. 68.

⁶ Dupont, Alan. *The Environment and Security in Pacific Asia*. Oxford, UK: Oxford University Press for International Institute for Strategic Studies. June 1998. p. 14

⁷ Muzi Lateline News. "Acid rain falls on one third of China." 6/15/99.
<http://dailynews.muzi.net/cgi/lateline/news?p=32348&l=english>

the cost of health problems resulting from air pollution alone will top \$98 billion by 2020.⁹ Although some cities have made progress, air quality continues to be horrible over large areas of China.

b. *Water pollution*

Water pollution is perhaps the most pressing and most visible environmental problem facing China today. China loses \$38 billion per year due to water scarcity and pollution. The pollution is found mostly in the country's rivers and lakes. Some of China's most popular scenic areas, such as West Lake and Lake Dianchi, have been sullied by industrial waste coming from nearby factories. Eighty-six percent of the river water in cities is not suitable for drinking or fishing.¹⁰ Although many cities, including Shanghai, have begun cleanup programs for their rivers, Elizabeth Economy notes that "in 1997, China's Environmental Protection Agency announced that water quality had deteriorated in every single major river system during the previous year."¹¹ Industrial waste and massive demand for water have caused the lower reaches of one of the two largest rivers in China, the Yellow River, to dry up for long periods of time—136 days in 1996.¹² The US National Security Study Group predicts that by 2025, China will be heavily importing fresh water from Russian Siberia.¹³ The health problems caused by water pollution are also enormous. Elizabeth Economy reports, "In 1996, 50,000 people were affected by water pollution-related diseases. Sixty million people cannot get enough water for their daily needs."¹⁴ Water problems are reaching an all-time high in China, and pose one of the greatest crises to stability.

c. *Deforestation, soil erosion, and the formation of deserts*

China is losing its forests at an alarming rate. Illegal logging and forest clearing for agriculture has resulted in more than 1.21 million acres of arable land suffering severe

⁸ Frank (1998), p. 68.

⁹ Economy (1999), p. 16.

¹⁰ Ibid.

¹¹ Ibid.

¹² Muzi Lateline News website: <http://lateline.muzi.net/cgi/lateline/news?p=1251&l=english>, "Experts Warn Yellow River May Dry Up," April 15, 1997.

¹³ "National Security Study Group East Asia Paper." *Inside the Pentagon*, Vol. 15, No. 16, April 22, 1999, p. 14.

¹⁴ Economy (1999), p. 15.

soil erosion.¹⁵ Further erosion threatens 753,000 more square miles;¹⁶ much of this land is at risk of becoming desert. Although there are massive reforestation programs afoot, 652,000 square miles of land is already desert, and unusable for meaningful agriculture cultivation.¹⁷ This loss has caused concern about China's long-term ability to feed itself. Already it supports "one-fifth of the world's population" on "only one-fifteenth of [the world's] arable land."¹⁸ Any loss of farmland is a serious problem.

The loss of forests has been catastrophic as well for the hundreds of millions of people living along China's rivers. When the forests are denuded, the main mechanism for preventing soil from eroding into the rivers will be lost, and not only will the riverbanks give way, but the silt in the river will raise the level of the water, enough to threaten to inundate major portions of the countryside.

d. *Flooding*

China's rivers are prone to severe flooding every year, causing great damage and loss of life. But the flooding in the summer of 1998 was the most severe since 1954. The Yangtze, Sung, and Nen Rivers all flooded,¹⁹ inundating around 52 million acres.²⁰ Chinese authorities reported that 4,610 people died, and the floods caused \$36.4 billion worth of damage.²¹ In August, the government dispatched the People's Liberation Army (PLA), mobilizing 100 million people to shore up dikes and rescue people who been stranded by the floods. By October, the floods were controllable.²² Although the media portrayed the PLA as heroes, there were ominous rumblings that dubious forces were involved. Several anonymous Chinese officials claimed that the government had diverted the floodwaters to run through rural villages in order to save large cities. Such actions are

¹⁵ Muzi Lateline News website: <http://lateline.muzi.net/cgi/lateline/news?p=3617&l=english>, "Plan Launched to Combat Soil Erosion." April 15, 1998.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Dupont (1998), p. 45.

¹⁹ The Economist Intelligence Unit website: <http://www.eiu.com/latest/369ecb8f.html>, "China: Manning the barriers" January 15, 1999.

²⁰ Economy (1999), p. 17.

²¹ The Economist Intelligence Unit website (1999).

²² Ibid.

a sign that the floods have social and political ramifications in addition to simple property destruction.²³

The flooding of 1998 was caused primarily by deforestation. Although the Yangtze and other rivers flood every year, 1998 was particularly bad because the soil erosion along riverbanks resulted in a degradation of the land's ability to divert water from the rivers.²⁴ Deforestation and flooding form a vicious circle, and with each new disaster, the countryside is further destabilized.

2. Problems Caused Elsewhere

a. Acid rain and air pollution

China's pollution-spewing factories and uninhibited economic development have caused the release of a large amount of sulfur dioxide into the air, around 20 million tons of sulfur dioxide per year, and the resultant acid rain.²⁵ According to Elizabeth Economy, the sulfur dioxide alone "now affects over one-fourth of China's territory, including 30 percent of China's agricultural land."²⁶ Japan and South Korea have protested that the airborne pollutants are affecting their countries' environments. South Korea's air quality is bad enough due to its own air pollution problems, but its scientists claim that a good portion of the methane and ozone-depleting substances comes from China.²⁷ Japanese scientists have concluded that China accounts for fully half of Japan's sulfur dioxide deposits.²⁸

b. Global warming

Global climate change, an effect produced by greenhouse gases trapped in the troposphere, is a global problem. After the US, China is the world's second largest emitter of greenhouse gases and ozone-depleting substances,²⁹ and the resultant global

²³ Platt, Kevin. *Christian Science Monitor* website: <http://www.csmonitor.com/durable/1998/08/07/p6s1.htm>, "As Yangtze Ruses, China Must Choose," August 7, 1998.

²⁴ Muzi Lateline News website: <http://lateline.muzi.net/cgi/lateline/news?p=7831&l=english>, "China Floods Caused by Environmental Damage," August 16, 1998.

²⁵ American University Website: <http://gurukul.ucc.american.edu/ted/JAPANAIR.htm> "Japan Air Pollution," TED Case Studies.

²⁶ Economy, Elizabeth. "Balancing Development and the Environment: China's Quixotic Quest," *U.S.-China Relations*, The Aspen Institute, 1998, p. 40.

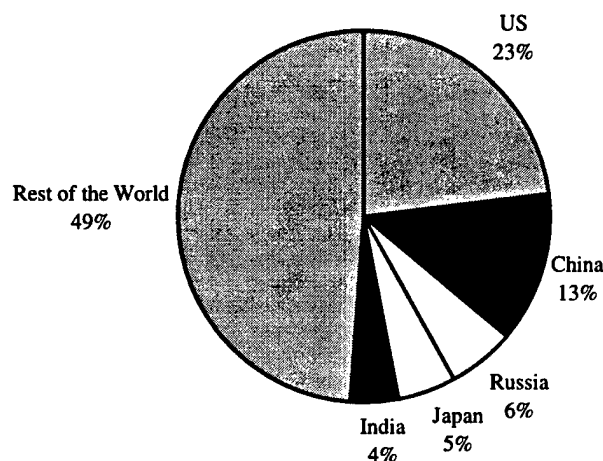
²⁷ Dupont (1998), p. 14.

²⁸ Ibid.

²⁹ Economy (1999), p. 15.

warming will have negative consequences throughout the world. Figure 1 shows the 1997 country contributions of carbon dioxide, a major greenhouse gas, due to the consumption and flaring of fossil fuels.³⁰ According to predictions by the Intergovernmental Panel on Climate Change, at current rates of increase in carbon dioxide emissions, the global mean surface temperature will rise between 1 and 3.5°C by 2100. As a result, sea levels will increase 15-95 centimeters.³¹ China cannot afford to ignore this aspect of its pollution. If the worldwide average sea level were to rise by one-half meter, one-third of China's coastal zone would be flooded, and a one-meter rise would cover Shanghai. People at risk in China could reach 100 million.³²

Figure 1. World Carbon Dioxide Emissions from Fossil Fuel Use, 1997



B. EFFECTS OF ENVIRONMENTAL PROBLEMS ON CHINA'S SECURITY

Such a dire environmental situation has broader political, economic, and social ramifications for the entire country. Already, much of the Chinese population is dissatisfied with the slow pace of political reform and the corruption that has accompanied economic reform. Environmental grievances serve as an additional irritant. The continuing depletion of China's resources threatens to boil over into anger and unrest. With improving means of communication and increasing access to media and

³⁰ Data derived from Energy Information Agency website: www.eia.doe.gov/emeu/ica/tableh1.html, "Table H1 World Carbon Dioxide Emissions from the Consumption and Flaring of Fossil Fuels", 1988-1997.

³¹ Draft Global Climate Change Paper, *Institute for Defense Analyses*, Last revised May 20, 1999, p. 8.

³² *Ibid.*, p. 36.

information, the Chinese population's expectations have risen with respect to environmental quality. In addition, greater access to information whets appetites for political news and participation."³³ Massive projects such as the Three Gorges Dam are causing more headaches, both environmental and social, than they are solving. Health problems and food scarcity could push China's population over the edge into dissatisfaction and unrest. The world would do well to pay heed to both the internal and external consequences of China's environmental issues.

1. Internal Consequences

a. Economic Growth and Social Unrest

After Chairman Mao Zedong's death, his successors, notably Deng Xiaoping, concluded that ideology was a self-destructive way to run the state, and in 1979 began to adopt economic reforms with the adage, "to get rich is glorious." The reforms led to the fastest economic growth in the world. Growth continues today, but environmental damage has taken its toll. The massive flooding, losses due to air and water pollution, and deforestation all have led to tens of billions of dollars of lost productivity and economic output. The implicit agreement between the Chinese Communist government and the Chinese people was support for the government as long as it produced economic growth. Today, the government is struggling simply to keep apace of its projections. The drag caused by environmental damage plays a large role in this deficiency, about 8-12 percent of GDP³⁴, by some measures enough to cancel out economic growth. Once the economy starts to slow down to zero, or turns negative, severe problems will ensue. There are tens of millions of migrant workers (by official estimates, 300 million by 2000³⁵) who have come to the cities from the countryside looking for a better life. The ones who can find jobs, find a better life; the ones who cannot — usually the products of state-owned enterprise (SOE) failures and layoffs — wander from city to city looking for work. So far this group has not caused much unrest, but the government is worried that they might. According to the 1999 East Asia report by the National Security Study Group, the numbers of people living in the cities are predicted to increase greatly in the 21st century, "placing great strains on basic societal functions and enormous pressure on governments

³³ *Inside the Pentagon*. April 22, 1999. p. 14.

³⁴ *Economy* (1998), p. 39.

³⁵ *Economy* (1998), p. 41.

to improve public services and infrastructure.”³⁶ An increase in the number of unemployed could have serious ramifications for internal stability in China.

Social unrest also can be caused directly by environmental problems, especially if official corruption or lax policies are accompanying factors. “Polluted water, damaged crops, illegal fees levied on farmers, and forced grain requisitions,”³⁷ all have caused discontent. The central government has not been inactive in combating these problems. It has passed laws that require local authorities to impose stiff fines on polluters, but these local authorities provide tax rebates to the offending firms to “take the sting out of [the] penalties.” The polluters essentially are left with no incentive to pollute less, much less clean up what they have already done.³⁸

Recently, farmers in Ningxia Autonomous Region have begun raiding Inner Mongolia for a certain type of plant which is in short supply in Ningxia. Thousands of police, officials, and peasants have become involved in the chaos that often accompanies the raids.³⁹ Alan Dupont notes:

Public tolerance of lax environmental-safety regulations and high pollution levels is falling, even in authoritarian states like China. In mid-1993, public anger in Lanzhou at a chemical plant’s persistent breaches of regulatory limits on pollution boiled over into serious rioting.⁴⁰

Elizabeth Economy reports that in 1993 there were 21 cases of rural unrest involving over 5000 people, and more than 830 involving over 500 people.⁴¹ In 1997, hundreds of thousands of peasants demonstrated in Hubei and Jiangxi Provinces against local environment-related corruption. Officials were embezzling money from the state grain procurement fund, leaving less money to buy grain, and exacerbating both the food and the economic situations in those provinces. In Jiangxi, the rioters took several officials hostage and burned their offices.⁴² Although these incidents have not been widely publicized and are often localized, the government is nonetheless confronted with growing unrest in the countryside. This public discord has its immediate roots in local

³⁶ *Inside the Pentagon*. April 22, 1999. p. 14.

³⁷ *Ibid.*

³⁸ Lieberthal, Kenneth. “Domestic Forces and Sino-U.S. Relations”, Ezra Vogel (ed) *Living with China*, (New York, W.W. Norton & Co.: 1997) p. 269.

³⁹ Economy (1999), p. 15.

⁴⁰ Dupont (1998), p. 14.

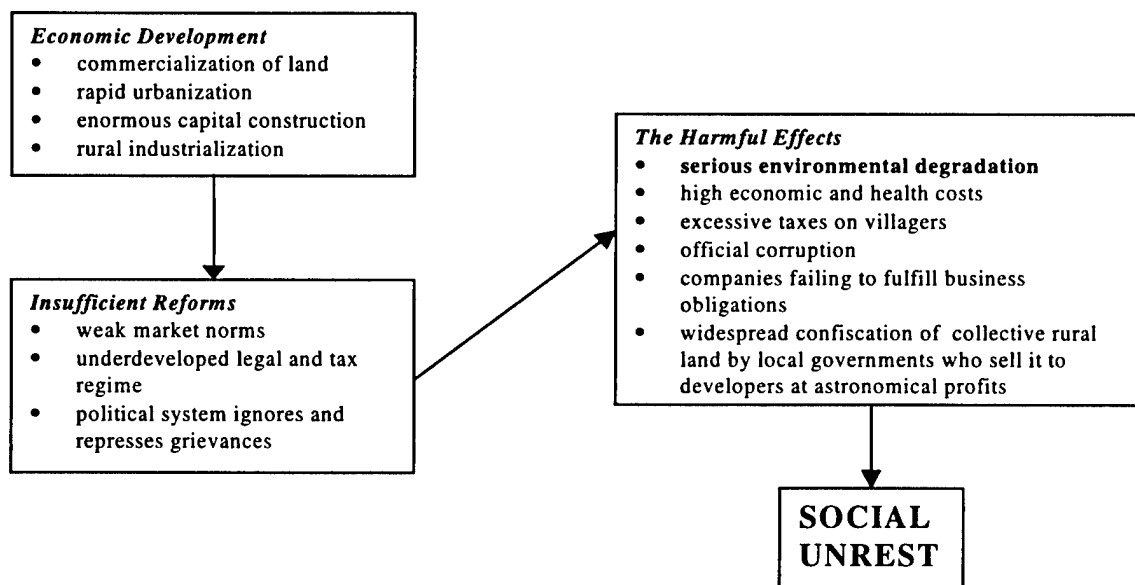
⁴¹ Economy (1998), p. 41.

⁴² *Ibid.*

official corruption, but ultimately is one of the side effects of rampant economic growth without regard for the environment. Figure 2 illustrates the vicious chain of events that can lead to social unrest. The government has not supported economic development with the necessary civil and social reforms and the unfortunate results, including environmental degradation and high corruption, take their toll.

The environment-related social unrest that is occurring at local levels today could quickly reach greater proportions, particularly as access to news media grows and the public becomes more aware of the higher standards of living and environmental movements occurring elsewhere. Protests over environmental conditions could expand to other areas, reflecting overall social discontent. Very likely, the Chinese government would respond as it did in Tiananmen Square and as it has done in almost every other instance of public demonstration, peaceful or otherwise—by asserting its authority through suppression and crackdown.

Figure 2. Chain of Problems Leading to Social Unrest⁴³



⁴³ Adapted from "Cadres vs. Villagers: Can China's Government Manage Rising Rural Conflict?" *Asiaweek*, May 21, 1999.

b. Health Problems

Given that China is one of the most polluted countries in the world, the health problems caused by environmental damage are extensive. The World Bank estimates that the cost to China of treating illnesses from air pollution alone will reach \$98 billion in 2020.⁴⁴ Not only does China *not* have the money to pay for the required health care, but as state-owned enterprises go bankrupt or are privatized, they cease to provide health service entirely, leaving an increasing number of people in the lurch. Aside from the economic impact of so many unhealthy and non-productive workers, large numbers of Chinese citizens may be unwilling to tolerate the price for China's ills.

c. Food Scarcity

As China's forests are disappearing, so too is its farmland. The trees hold the topsoil in place, and once they are gone, fertile land next to rivers erodes and the topsoil washes away. Urban development also takes its toll on farmland. Several critics of China's agricultural policies have expressed concern that China may not have enough food to feed its citizens within the next few years. Vaclav Smil has concluded that China's own policies, including the overuse of chemical fertilizer, have jeopardized sustainable development.⁴⁵ Lester Brown, president of the Worldwatch Institute, believes that as China becomes wealthier, it will change its eating habits, adding more grain-fed livestock to its diet and depleting larger amounts of grain. He claims that this shift will drive up world grain prices as China is forced to import massive amounts of grain, causing a worldwide grain shortage. The Chinese government refutes these criticisms strongly, but acknowledges that it is losing farmland at an astounding rate.⁴⁶ If China becomes unable to feed its own people, great unrest and instability could ensue; hungry people are desperate and often violent people. As shown by the examples in Ningxia, Hubei, and Jiangxi in an earlier section, corruption mixed with concerns about food can spur trouble.

⁴⁴ Economy (1998), p. 42.

⁴⁵ Dupont (1998), p. 45.

⁴⁶ Ibid.

d. *The Three Gorges Dam Project and Relocation-related Unrest*

Over the years China has relocated 10.2 million people due to the construction of dams.⁴⁷ The grandest of them all, the Three Gorges Dam Project on the Yangtze River, requires that as many as 1.9 million peasants and city dwellers living in the area to be flooded be forcibly resettled.⁴⁸ The environmental implications of such a large project are disturbing. The lake that will be created by the dam is projected to be 450 miles long and 135 meters deep, destroying about 30,000 hectares of farmland.^{49, 50} Anything as large as the Three Gorges Dam is bound to have an impact on the environment, and many are uncertain just what the effects will be. Experts are concerned about the sewage and chemicals that could clog the dam, as well as the polluted cities that will be flooded. If the dam were to burst, say from earthquake damage, it would imperil millions.⁵¹

The resettlement plan and the corruption of local officials remain the flashpoints of the Three Gorges Dam project. Premier Zhu Rongji has forbidden local governments from opening up virgin land for resettlement of farmers, and there is simply no more farmland available for them in the Yangtze River valley. The factory jobs that were promised to relocatees have failed to materialize as state-owned enterprises have laid off workers or simply shut down, and few peasants are willing to move to Xinjiang or Inner Mongolia where the government has set up relocation programs. Those who do relocate complain that life is even harder there, and soon return.⁵² Corruption is rampant as well. Local officials often pocket much of the compensation money that the central government has allocated, and falsify reports on how many people have been moved and how much farmland has been doled out. Contractors have had to pay such high kickbacks to local officials that they must use cheap, inferior building materials.⁵³ And the cities

⁴⁷ Wu Ming. International Rivers Network Website. <http://www.irn.org/programs/threecg/resettle.html>, "Resettlement Problems of the Three Gorges Dam: A Field Report by Wu Ming," March 1998.

⁴⁸ Becker, Jasper. "Despite promises, resettlement prospects look bleak for masses displaced by Three Gorges Dam project. Rural peasants cast adrift on flood tide." *South China Morning Post*. February 14, 1999, p. 7.

⁴⁹ Shen, Doris. "New Study Forecasts Three Gorges Resettlement Disaster." *World Rivers Review*. April 1998.

⁵⁰ Wu Ming (1998).

⁵¹ Dupont (1998), p. 66-67.

⁵² Becker, Jasper. International Rivers Network Website: <http://www.irn.org/programs/threecg/resettle.html>, "Dam Cadres 'steal \$217m'," *South China Morning Post*, February 14, 1999, p. 1,

⁵³ Becker (1999), p. 7.

that were supposed to be built to house the relocatees are often on unstable ground or of such shoddy workmanship that they may soon collapse.⁵⁴

The entire Three Gorges Dam project has left the people of the Three Gorges area angry and disillusioned with both the corrupt local governments and the unresponsive central government. Although tens of thousands of farmers have petitioned the central government for redress, they feel that their pleas have been ignored.⁵⁵ Thus, the government is stuck with tens of thousands of newly unemployed or underemployed workers and farmers who are angry at having been slighted, angry at public officials for blatant corruption, and angry at the loss of their livelihoods without a say or due compensation. The atmosphere is ripe for unrest.

2. External Consequences

a. Conflicts from air pollution and greenhouse gas emissions

Japan and South Korea are the countries most likely to come into conflict with China over air pollution. Although scientists in both countries are concerned about the impact of air pollutants from China, neither country has been willing to confront China on the matter. In fact, Japan provides a large amount of "green" aid to China in order to help it reduce its emissions.⁵⁶ It is unlikely that air pollution could lead China into military conflict with Japan and South Korea, but good relations with both countries are vital to China's sense of security in the region, not to mention its economic growth. As emissions increase in the coming years, pollution could very well become a major source of diplomatic strife between South Korea and Japan on the one hand, and China on the other.⁵⁷

China's experience with greenhouse gas emissions is a similar story. Although it is the second greatest producer of such gases, other countries have not had the political nerve to confront China on the issue. Efforts by other countries to combat global warming are severely hindered without the cooperation of all countries that are major greenhouse gas emitters. Until now, China, along with other countries, has refused to

⁵⁴ Becker, Jasper. "Whip Comes Down on Yangtze Kickback Officials" *South China Morning Post*, February 14, 1999, p. 7.

⁵⁵ International Rivers Network Website. <http://www.irn.org/programs/threeg/pr990218.html>, "Resettlement Problems at Three Gorges Dam Continue Unchecked: Ten Thousand Relocatees Petition Central Government for Help," International Rivers Network Press Advisory, February 14, 1999.

⁵⁶ Muzi Lateline News website: <http://dailynews.muzi.net/cgi/lateline/news?p=24438&l=english>, "Japan, China set to define green cities plan," April 5, 1999.

⁵⁷ Ibid.

commit to reducing greenhouse gas emissions. As the earth's temperature continues to rise, other countries, including the US, may feel they have no choice except to demand that China agree to sign an international agreement and decrease its emissions (along with other countries) or face problems in the international community.⁵⁸

b. *Internal unrest externalized*

One of the main issues associated with unrest inside China is the externalization of internal instability. If internal conditions in China were to become so bad that they threatened the government's power, the government might act against another country to assert its military strength. This scenario is not far-fetched. There are precedents for the "trouble within, danger without" syndrome," as China security expert Alan Whiting notes.⁵⁹ Mao created a situation with Taiwan in 1958 to initiate the Great Leap Forward. The China-India war of 1962 was aggravated by the internal crises of the early 1960s.⁶⁰ It is also interesting to note that the military exercises and the missiles present in the Taiwan Straits, designed to intimidate the Taiwanese during the elections, also came at a time when PRC leaders were asserting their authority in preparation for the post-Deng era. Whiting remarks, "a weaker leadership in a post-Deng regime might feel pressed, domestically or internationally, to assert itself militarily."⁶¹ Environmental damage and the unrest it causes can fuel this fire. For example, to counter the growing anti-government sentiment surrounding environmental issues, the central government could create an incident with Taiwan to rally the people around and support Chinese nationalism and unity, much as it did with the riots and demonstrations after the accidental bombing of the Chinese embassy in Belgrade by NATO. Such a situation could easily escalate however, much to the detriment of everyone involved.

The Spratly Islands are another flashpoint that could be exacerbated by environmental problems. China and the other countries claiming the islands believe that the Spratlys sit atop large deposits of oil, natural gas, and other natural resources. Desperate to exploit energy resources cleaner than its sulfur-rich coal, China has claimed sovereignty over all the islands, and complains loudly whenever there is an infraction of its claims. As the demand for cleaner energy becomes more acute, China may press its

⁵⁸ Personal Interview with Elizabeth Economy, Fellow, Council on Foreign Relations, July 6, 1999.

⁵⁹ Whiting, Alan S. "The PLA and China's Threat Perceptions," David Shambaugh, Richard H. Yang, ed. *China's Military in Transition*. (The China Quarterly, Oxford University Press: Oxford, UK 1997) p. 351.

⁶⁰ Ibid.

⁶¹ Ibid.

claims all the harder, bringing it into conflict with the other countries in the region. What is worse is that China's sovereignty, an almost sacred concept in Chinese foreign relations, is at stake.

Food scarcity also could play a factor in tensions in the South China Sea around the Spratlys and what China calls the Diao-yu Islands, which it disputes with Japan. The fish catch in both places is quite high; the Spratlys alone yield 7.5 tons of fish per square kilometer.⁶² Although fishing seems like a small issue, tempers can flare up when fishing involves boundary disputes. Such was the case in June of 1999 when North and South Korean naval ships fired on each other after repeated incursions into South Korean waters by North Korean fishing boats and naval escorts. As farmland is destroyed, and the population rises, fish will assume a greater place in China's diet, and these issues could come to the forefront; they could very well be part of the cause of conflicts that erupt over what are literally barren rocks and partially submerged reefs. The situation is exacerbated by the fact that current fishing practices in the region are unsustainable. China's fishing industry has grown rapidly in recent years—from 1980 to 1995, the total Chinese fish catch rose from 5 million to 25 million metric tons per annum.⁶³ There will be no fish left to fight over if no one takes the responsibility to prevent overfishing.

c. Conflicts from water scarcity

China is not the only country that needs to worry about water scarcity. Like every other environmental problem, water scarcity in China has the potential to cause unrest, but China's water travails bring it into conflict with other countries. As with land scarcity, Lester Brown argues that water scarcity will cause problems worldwide. China will have to import grain because its irrigation water is being siphoned off by residential areas or is contaminated by pollution, increasing the cost of grain worldwide. Other countries that import grain will also have to pay the higher prices and, in extreme cases, this may cause instability in those countries as well.⁶⁴ Many others dispute Brown's forecast, but the fact is that water scarcity has affected international relations in adverse ways.

⁶² Dupont (1998), p. 53-54.

⁶³ China Environment Series 2 Working Group report, "Chinese Fisheries and International Cooperation on Oceanic Issues," *Woodrow Wilson Center Environmental Change and Security Project Report*, Summer 1998.

⁶⁴ International Rivers Network website: <http://www.irn.org/pubs/wrr/9806/china.water.html>, "China's Water Shortages Could Have Global Impacts," *World Rivers Review*, June 1998.

The Mekong River runs through China, Vietnam, Laos, Cambodia, and Thailand. All of these countries, except China, signed an agreement in 1995 governing the use of the Mekong's water and development on the river. The agreement provides for sustainable development and water-sharing. It is significant that China refused to be a signatory because by doing so, it reserved the right to develop its stretch of the Mekong. China proclaimed that any development of its portion of the river was purely an internal matter, even though China's actions affect every country along the river's course, since the river's source is in China.⁶⁵ In fact, China plans to build 14 dams in Yunnan on the Mekong or its tributaries.⁶⁶ One of the reservoirs that would be created to provide water for China would be able to dam the flow of the river for six months, disturbing the natural cycle. This would disrupt both Vietnam and Cambodia's fishing industries, cause soil erosion, and decrease the productivity of the land.⁶⁷ Given that the other countries along the Mekong also want to exploit its potential, such actions by China are harmful to relations.

Part II. Importance of China's Environmental Security to the US

US interests in China range from economic to ideological. Democracy and stability in China and the Asia-Pacific region, access to economic markets, and human rights are important issues that drive US policy on China. China's environmental problems affect its people and economy and, as illustrated, can be a major source of internal and regional instability. US security interests are therefore linked to the lessening of environmental degradation in China.

A. US INTERESTS IN CHINA

1. Political Change and Stability

Premier Zhu Rongji cited internal stability as China's number one goal, followed by economic growth and reform, for 1999-2000.⁶⁸ Besides supporting this forward-looking agenda, the US has its own interests in a stable China. Internal stability will bring

⁶⁵ Dupont (1998), p. 71.

⁶⁶ Dupont (1998), p. 71-72.

⁶⁷ Dupont (1998), p. 72.

⁶⁸ Clark, Dick and David Lampton, "Rapporteur's Summary", *US-China Relations*, Second Conference, March 30-April 1, 1999, Congressional Program, The Aspen Institute, p. 2.

China closer to a democracy (authoritarian regimes flourish during moments of insecurity or destabilization). Democracies evolve from secure environments that allow focus on internal development and provide space for invention and experimentation.⁶⁹ In turn, democracy fosters greater stability. Although China is currently becoming less authoritarian, this does not mean it is becoming more democratic. Authority is decentralized, but local government does not respond to people's needs, an essential component of a democracy.⁷⁰ The problem of decentralization manifests itself in the corruption of local officials. China's political reform is lagging behind its rapid economic growth and, consequently, public discontent is growing. Illegal practices by government officials are often motivated by industry profit maximization, perverting resource allocation, and pollution prevention. All together, this leaves the population ill and disgruntled.

Promoting stability in China and the rest of the Asia-Pacific region has long been a top US security goal. The 1997 National Security Strategy (NSS) states that "An overarching US interest is China's emergence as a stable, open, secure, and peaceful state."⁷¹ The US has actively engaged China in order to promote peace and democracy in the entire Asia-Pacific region. US and Chinese leaders have met to address such Chinese security issues as cross-strait relations with Taiwan and the proliferation of nuclear, chemical, and biological weapons, as well as regional security issues such as the tensions on the Korean peninsula and between India and Pakistan. China's democratic transition will be especially important for US security as China's economy grows and as it gains more influence in the region and world.

2. Open Markets

China has one of the three largest economies in the world. With high investment and savings rates, bold economic reform measures, and massive infrastructure plans the economy is expected to continue its growth. American businesses would like to tap into this market early, and the promotion of US exports into China will continue to be a top

⁶⁹ Office of International Security Affairs, "The United States Security Strategy for the East Asia-Pacific Region". Arlington, VA: Department of Defense (November 1998) p.45.

⁷⁰ Oksenberg, Michel, "China's Political Transformation," *US-China Relations*, Aspen Institute, April 13-17, 1998, p. 22.

⁷¹ The White House, *A National Security Strategy for a New Century*, May 1997, p. 33.

diplomatic priority. Indeed, the US trade deficit with China, over \$50 billion in 1998, is topped only by that with Japan.⁷²

Foreign access to Chinese markets depends on China's internal economic and political security. Continued internal stability would allow China to further advance along its current economic trajectory, opening and standardizing secure markets and goods. But their greatest fear is a collapse into chaos during this period of transition (as they witnessed Russia collapse); therefore, their economic changes are slow, centralized, and well controlled. Any threats to its internal cohesion might cause the government to heighten centralization and limit foreign access to Chinese markets, destabilizing bilateral relations. The US would like to see a stable China that continues along its current economic path and remains open to foreign investment.

Healthy trade relations between China and the US prove not only economically lucrative but also an important tool of diplomacy. Both the US and China have made an explicit link between access to markets and political relations: strong economic ties help breed positive political ties, and vice versa. If American businesses are heavily invested in Chinese markets, the US and China both will have more reason to stay on good diplomatic terms. Likewise, good political relations and open dialogue will raise more opportunities for economic cooperation.

Economic development in China has been accompanied by increasing demands for political reform and respect for rule of law. Top Chinese officials are aware that their political system is outdated and lacks broad-based popular support; they recognize that political reform is a necessity.⁷³ If China follows a path of development similar to that of countries like South Korea or Taiwan, economic growth will usher in a prosperous middle class that "is increasingly armed with information and the communication tools to analyze the political scene and organize political action."⁷⁴ And a middle class with a strong stake in the economy, one that helps ensure government legitimacy, is an essential ingredient of democratic change in China. It would hold the government accountable both in the formulation and implementation of policy; it would pressure the government to reassess its rule of law against international economic and social norms, and eventually adopt higher standards. Such political reforms would support US principles and economic

⁷² Hong Kong Trade Development Council website: <http://www.tdc.org.hk/alert/us9903.htm>, "Calls for Protectionism Rise as US Trade Deficits Surges," Issue 3, February 1, 1999.

⁷³ Ibid., p. 24.

⁷⁴ Ibid., p. 20.

interests on issues such as human rights and intellectual property rights, which have historically been a cause for strain in US-China relations.

3. China as a Responsible Neighbor

The US would like for China to be a positive force in a peaceful, stable, and democratic Asia-Pacific region. According to the 1998 Strategic Assessment from the National Defense University, within the next 20 years or so, China will develop the greatest potential to challenge US interests in the region, using economic, political, and military means. Rather than encouraging competition and conflict, the US and its Asian partners hope to persuade China that cooperative relations are in everyone's best interests.⁷⁵ Souring China's relations with the US or US allies could be destabilizing for the entire region.

Unfortunately, China currently shares precarious relations with US partners in the Asia-Pacific region. The regional entities of greatest interest to the US, and potentially of clashing concern to China, include Taiwan, Tibet, the Spratly Islands, Japan, and, in various aspects, the Koreas. China is uneasy about the fact that there are 100,000 American troops in Asia, and views this as a means of containment. President Clinton stated that this military presence is not to contain China or any other country, but to keep peace and "to give confidence to all that the potential threats to Asia's security will remain just that, potential."⁷⁶

US-China relations have been aggravated in the past when American diplomacy disregarded regional dynamics and instead focused on bilateral ties. An example of this is China's reaction to the 1997 US-Japan Revised Guidelines for Defense Cooperation. China responded with a revised clause in a Russo-Sino agreement, the New Security Concept, criticizing military blocs in the region as threatening and unnecessary, essentially the cause of regional instability.⁷⁷ It is therefore in the interests of the US to always consider the US-China relationship and China's role in the region when acting bilaterally or multilaterally.

China's uncertain future and opaque intentions have caused ripples in regional relations. In particular, China's build up of its weapons inventory and advances in force

⁷⁵ National Defense University, *1998 Strategic Assessment, Engaging Power for Peace*, p. 39.

⁷⁶ Inside China Today website, www.insidechina.com, "Clinton's Foreign Policy Address On China", April 7, 1999, p. 3.

⁷⁷ Finkelstein, Dr. David M., "China's New Security Concept: Reading Between the Lines", Issue Paper, Project Asia Roundtable, (April 1999). Alexandria, Virginia: CNA Corporation. p. 8.

projection capabilities have cast it in a suspicious light. The country is acquiring new transport aircraft, fighter-bombers, and anti-ship and submarine-launched ballistic missiles. Assuming that China is able to continue at the current rate of military modernization, it is expected that by 2015, China will have the capability to strike a wide range of civilian and military targets in East, Southeast, and South Asia with nuclear or conventionally armed ballistic missiles. This could have a great psychological impact on security perceptions in the US and allies in the region. On one hand, it might intimidate other Asian countries into gradually becoming more pro-Chinese and less supportive of US Asian policies. On the other hand, it might lead other countries to build up their own arms, which would increase tensions and destabilize the region's strategic balance.⁷⁸ Besides speculation on China's intentions with the development of these new capabilities, exercises like those in the Taiwan Strait and Spratly Islands reveal its new assertiveness. In these instances, several countries in the region responded in unison to counter these shows of muscle. The most obvious example is the Hangzhou Conference of 1995, where ASEAN states protested China's actions in the Mischief Reef.⁷⁹

China's role in the region wavers and fluctuates, and the US makes every effort to avoid conflict and maintain stable ties and good relations with China. But if China acts aggressively against its neighbors and in a manner that counters US interests, the US may well retaliate, even if this action will inevitably result in the severance of ties with the country.

4. China as a Responsible International Player

As China's economic and political importance grows in global affairs, it is in everyone's best interests for China to become a responsible international player. According to the 1997 US National Security Strategy:

The prospects for peace and prosperity in Asia depend heavily on China's role as a responsible member of the international community. China's integration into the international system of rules and norms will influence its own political and economic development, as well as its relations with the rest of the world.⁸⁰

⁷⁸ Swaine, Dr. Michael D., "Chinese Military Modernization and Asia-Pacific Security", *US-China Relations*, Second Conference, March 30-April 1, 1999, Congressional Program, The Aspen Institute, pp. 35-37.

⁷⁹ Finkelstein (1999), p. 5.

⁸⁰ The White House National Security Strategy, 1997.

For China, participation in international organizations has allowed it to gain access to various types of development assistance. Involvement also allows China to participate in writing the rules and standards to which the international community commits.⁸¹ For the US, China's involvement not only strengthens international organizations, but it also supports the objective of encouraging China to play by the rules on issues that affect US interests. Integrating China into international institutions that promote global standards on proliferation, trade, the environment, and human rights is the United States' long-term strategy with China, according to President Clinton.⁸² If China has a say in the development of international norms, then it will be more apt to commit wholly to them. If it adheres to the rules and takes on a leading role in international organizations, then its relations with other countries will be less likely to run into problems.

Ezra Vogel writes that, "no international institution can be strong without China's active and positive participation."⁸³ China's inclusion in these organizations is essential to further opening the country to international dialogue and institutions, and persuading it to comply with international customs and norms that Chinese leaders still resist. The US has specific interests in this happening. One issue of US concern is China's foreign trade practices. China's integration into the international economy has been a critical factor in its accelerated economic development. However, it is having difficulty acceding to some of the rules stipulated by international trade organizations. As stated earlier, the United States' bilateral trade deficit with China is one of its largest. An important step in reducing this imbalance would be to help China gain entry into the World Trade Organization by persuading it to fully implement the regime's accountability standards, grounded in the rule of law and free-market principles.⁸⁴

Both China and the US are interested in strengthening the international organizations in which they are vested, including the United Nations, the World Bank, and the International Monetary Fund (IMF). Notwithstanding China's difficulties with admittance into the WTO, in economic organizations, China has tended to adhere to the established international norms. In other areas, however, namely arms control,

⁸¹ Harding, Harry, "A Primer on China's Foreign Relations", *US-China Relations*, First Conference, April 13-15, 1998, Congressional Program, The Aspen Institute, p. 15.

⁸² Inside China Today website, www.insidechina.com, "Clinton's Foreign Policy Address On China", April 7, 1999, p. 6.

⁸³ Vogel, Ezra, "Introduction: How Can the US and China Pursue Common Interests and Manage Differences?" Ezra Vogel (ed) *Living with China*, (New York: W.W. Norton & Co.: 1997) p.30.

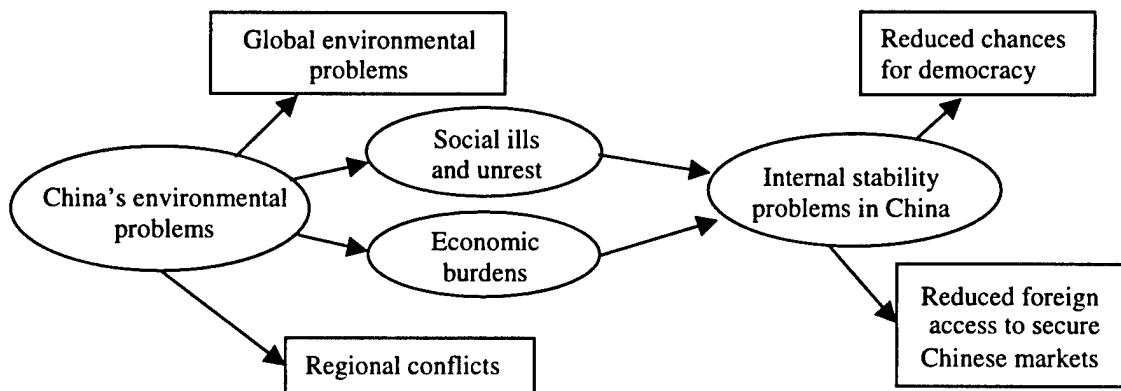
⁸⁴ Gill, Bates, "Limited Engagement", *Foreign Affairs*, Volume 78, Number 4 (New York: July/August 1999), p. 72.

environmental issues, and human rights, although China has formally accepted the responsibilities embodied in its participation in these conventions, its compliance has been inconsistent.⁸⁵ Analysts of Chinese foreign policy debate whether China's leaders truly accept the standards of the international community in these areas, or whether they simply fear the costs of exclusion. This is a critical question because if the former is true, then China should be less likely to violate the standards.⁸⁶

B. EFFECTS OF CHINA'S ENVIRONMENTAL PROBLEMS ON US SECURITY INTERESTS

From the above discussion, it is evident that environmental problems in China will affect US interests if they undermine China's political and economic stability and its relations with neighboring countries. The US likewise has reason to care about China's contribution to regional and global environmental problems. Many scenarios are possible. With China's lack of transparency, it is impossible to predict exactly how environmental security problems will play out in China, but it is precisely this lack of certainty that compels an understanding of how environmental security problems *could* develop and create problems for the US. Figure 3 maps the linkages between China's environment and US security interests that were established in the above sections.

Figure 3. Links Between China's Environment and US Security Interests



NB: Boxed items denote US security interests.

⁸⁵ Harding (1998), p. 16.

⁸⁶ Ibid., p. 15.

Part III. Environmental Engagement between the US and China

Through environment engagement, the US is in a good position to encourage China to heed its environmental problems. The benefits of environmental engagement are clear: once environmental problems occur, the damage is usually irreversible and costly; it is better to address them early on, to be proactive and preventive. Active engagement on the environment is not only a way for the US to help China prevent or mitigate environmental problems before they become significant security issues, but it also will yield additional benefits for diplomacy and trade. Both countries have a stake in China's environmental future, and each country wishes to improve relations with the other. China is enthusiastic to receive US technologies and, likewise, US companies are eager to invest there. In many respects, the environment seems to be a win-win area of engagement.

But because of the long-term nature of environmental problems, many government leaders in China and the US alike either overlook or underestimate the effects they might have on China's security and US interests. It would seem that the growing environmental awareness in China's population, and the rising numbers of environmental-related protests, would be ample reason for leaders to notice and take action now.

A. DIRECT BENEFITS OF ENVIRONMENTAL ENGAGEMENT

1. Past Efforts in China

China's own environmental programs have not been very effective. Even though there are various laws in place and government leaders repeatedly emphasize the importance of environmental protection, China's environmental problems continue to worsen. According to Michael McElroy and Chris Nielsen:

The Chinese government knows that both sound energy development and a sustainable environment are vital to their future. On the books, environmental law and policy are extensive and ambitious. But these measures falter in implementation and enforcement owing to a host of societal, political, and legal factors.⁸⁷

Much of the problem stems from the belief that environmental objectives counter economic development, China's number one priority. Bilateral efforts may not be able to

⁸⁷ McElroy and Nielsen (1997), p. 218.

solve all of the factors conspiring against environmental change in China, but they can help substantially by making available new environmental technologies and management techniques and increasing public awareness of environmental problems.

US-China bilateral environmental efforts began over a decade ago. The US government maintains many avenues for Sino-US environmental cooperation, including: the State Department's Joint Implementation program, which guides US private investment; the Agency for International Development's Aid US-Asia Environmental Partnership, which helps push clean energy technologies; the US-China Policy Forum on Environment and Development, which increases dialogue on sustainable development issues; and the Overseas Private Investment Corporation (OPIC), which raises support capital for clean energy programs.⁸⁸ In recent years, the US and China have agreed to work together on air and water quality monitoring and emissions trading programs, clean energy technologies, environmental education, and climate change issues. Some of these bilateral programs have fostered permanent change and continue to yield environmental benefits, while others have become ineffective soon after the program's finish.

Environmental programs that simultaneously cut costs and increase energy efficiency are of highest priority to the Chinese, and as a result have been the most successful. Joint US-China projects have brought new, clean coal technologies and energy efficiency practices to China's power plants and industrial processes. At the same time, engagement does not necessarily need to be based on technology transfer to be productive. Recently, a series of US environmental education textbooks that teach children how to deal with choking smog and other pollutants were translated into Chinese, to be used by 80,000 students in 22 primary and secondary schools in Beijing. About this pilot project, Liu Yanhua, head of the Ministry of Science and Technology's Department of Rural and Social Development, said that, "China's cooperation with other countries is guided by the purposes that the government wants to advance and as long as the country's government is friendly, China will go for it."⁸⁹

Many other programs never venture beyond high-level dialogue and no substantive changes follow. According to China environment expert Elizabeth Economy,

⁸⁸ Dunn, Seth, China 2000 website: www.capitolweb services.com/china2thou/9704p6.html, "What the US Can Do to Help China Environmentally," April 1997.

⁸⁹ Inside China Today website, www.insidechina.com/china/news/22.html, "US Textbooks Used to Teach Schoolchildren Pollution Coping Methods", February 8, 1999, p.1.

there is a propensity for the Chinese to work on broad environmental principles through high-level visits. These types of engagement seldom lead to concrete changes in policy.⁹⁰

2. Environmental Benefits of Cooperation

China's environment can benefit greatly from bilateral cooperation with the United States. Besides gaining US environmental and energy efficiency technologies, China can learn from the United States' successes and failures in environmental management and protection. For example, gaining a better understanding of wetlands management and the environmental consequences of clear-cutting forests could help China mitigate its annual flooding problems. In addition, bilateral efforts can explore and implement "no regrets" options, which yield benefits that outweigh costs, even without considering the non-market environmental impacts.⁹¹

Environmental change in China will also produce benefits for the global environment. Global climate change is a high-priority environmental issue in the United States. Besides targeting its own emissions, the US would like China to reduce its greenhouse gas emissions because reductions can be made in this country with lower incremental cost. China's focus on local problems makes global environment problems a low priority,⁹² but through some of the environmental programs that target China's domestic environmental problems, the US will indirectly make gains on the climate change front. McElroy and Nielsen state:

Taken in isolation, forging US-Chinese engagement on climate change appears difficult and unlikely. But cooperation in energy development pursued on other environmental, economic and political grounds can simultaneously yield benefits for protection of global climate stability and would be a major step in the right direction.⁹³

For example, technologies that improve energy efficiency in power generation will allow the Chinese to burn less coal to get the same amount of energy. Not only will this save costs and reduce toxic air pollution for China, it will also reduce the emissions of carbon dioxide, a major greenhouse gas.

⁹⁰ Interview with Elizabeth Economy, July 7, 1999.

⁹¹ McElroy and Nielsen (1997), p. 239.

⁹² Frank (1998), p. 70.

⁹³ McElroy and Nielsen (1997), p. 219.

3. Heightened Environmental Awareness

As Chinese communities have become wealthier and better educated, they have grown more aware of China's environmental problems and have begun to demand stronger regulations and better enforcement of environmental laws. The media also has had a strong effect on public awareness. Almost daily, newspapers proclaim environmental problems. In many cases, citizens gather to take action against the local industries that are revealed as polluters and, consequently, the polluting factories often are shut down.⁹⁴ General public awareness that comes from the media is therefore important, but it could be stronger. For example, the media does not inform citizens about how to get involved in environmental activities.⁹⁵ Participants in environmental movements in parts of China often are unaware of the progress made in other movements elsewhere in the country. Many China experts believe that "There continues to be a lack of in-depth environmental reporting that can have a resounding impact on the public and decision makers."⁹⁶ Even though the Chinese government has given non-governmental and grassroots environmental organizations an unusual amount of flexibility to criticize and expose the weaknesses of local environmental protection efforts, it has been careful to make it very difficult for these groups to organize and stir a major uprising.⁹⁷

Environmental engagement between China and the US will bring the environment topic to the newsstands and heighten public awareness. In general, interaction with the United States, especially technology transfer, attracts attention in China. A group of Chinese environmentalists meeting with President Clinton in July 1998 told him that the environmental movement in China would grow if the US provided technical assistance.⁹⁸ High visibility programs force the Chinese government to be accountable for its environmental policies and proposed improvements.

High profile environmental cooperation between the US and China also will serve as a model for other countries.⁹⁹ According to Michael May, a China environmental expert, "How the existing powers, most of all the United States, engage China is likely to

⁹⁴ Dunn (1997).

⁹⁵ China Environment Series Working Group remarks, May 26, 1998, *Woodrow Wilson Center Environmental Change and Security Project Report*, Issue 2, Summer 1998, p. 76.

⁹⁶ *Ibid.*, p. 77.

⁹⁷ Interview with Elizabeth Economy, July 7, 1999.

⁹⁸ Muzi News Lateline website: <http://lateline.muzi.net/cgi/lateline/news?p=5213&l=english>, "US to Help China on Environment."

⁹⁹ Frank (1998), p. 68.

have a profound effect on the perceptions which India, Pakistan, Indonesia, and many other countries in and outside the Asian Continent will have of the options open to them and on the assumptions they will make about what the US role in their growth will be.”¹⁰⁰

B. INDIRECT BENEFITS OF ENVIRONMENTAL ENGAGEMENT FOR DIPLOMACY

The US and China have confronted each other over issues such as human rights, China's entry into the World Trade Organization, and global climate change; however, both countries would like to maintain areas of common ground. For the US, working with China, rather than isolating or containing it, is the best way to advance its own interests. According to China expert Ezra Vogel:

It is in US interest to develop good working relationships with China, to encourage those in China who staked their careers on closer relations with the West, to have China participate in a constructive way in international organizations, and to preserve open world markets and the existence of non-proliferation regimes.¹⁰¹

Indeed, claims Bates Gill, Director of the Brookings Center for Northeast Asian Policy Studies, “engagement has already opened China to enormous changes of great benefit to the United States: nascent democratization, embrace of the market, and steady acceptance of international norms.”¹⁰²

For China, a solid relationship with the US would bring investment in the economy, stronger legitimacy to government, especially in international affairs, and an ease in tensions at home and abroad. China itself has made this point. Several weeks after the Belgrade embassy bombing, the *People's Daily* stated that, “Upholding the independent foreign policy of peace also covers promoting friendly cooperation with Western countries including the United States... So long as they are willing to implement the Five Principles of Peaceful Coexistence, China is ready to establish cooperative relations with them in various fields.”¹⁰³

¹⁰⁰ Ibid., p. 70.

¹⁰¹ Vogel, Ezra F., “Chinese Politics and Foreign Policy,” *U.S.-China Relations Second Conference March 30-April 1999*, The Aspen Institute, Vol. 14, No. 2, p. 15.

¹⁰² Gill (1999), p. 67.

¹⁰³ Muzi Lateline News Website: <http://dailynews.muzi.net/cgi/lateline/news?p=31050&l=english>, “China to Reseek Friendly Relations with US,” June 3, 1999.

1. Good Channel for Consistent Engagement

Since the establishment of US-China relations, the primary vehicle of US policy has been “engagement,” wherein the US participates in dialogue with China on a whole range of topics, pushing its (US) interests (in human rights, for example). At the same time, the US pursues its primary aims of strengthening economic ties with China, and maintaining the security of the Asia Pacific region through a series of treaties and alliances.¹⁰⁴ Presidential administrations in the United States have followed this policy for twenty years, and continue to follow it today.

Engagement means that while issues besides trade and security can become serious hindrances to US-China relations, they are not central to US policy in the sense that they do not embody the kind of controversy that can threaten to sever relations. The environment is one of these issues. The environment is also not as controversial as other issues currently dividing the US and Chinese governments, such as human rights and arms control.

Both China and the US are in agreement about the need to clean up China’s environment and protect the global environment. As a result, both sides see the environment as a means to cooperate consistently. To be sure, there are differences in the countries’ positions that are too large to be ignored; the haggling over global warming and emissions standards is notable. The US also must be careful not to be seen as meddling in China’s affairs. But these difficulties are not without solutions. As long as the countries carefully shape their roles with sensitivities to their differences, the potential upside of successful interaction over the environment is great.

2. Cooperative Environmental Programs Can Endure Fluctuations in Relations

Due to its relatively peripheral role in US-China relations, a notable advantage of environmental engagement is its resilience to fluctuations in US-China policy. As such, environmental programs can serve as consistent means for building and strengthening ties. US-China environmental cooperation has shown itself able to withstand the troughs in US-China relations in the past several years. In March 1997, US Vice President Al

¹⁰⁴ DefenseLink website: <http://www.defenselink.mil/speeches/1995/s19951030-kaminski.html>, Remarks by William H. Perry to the Washington State China Relations Council, Seattle, October 30, 1995. “U.S. Strategy: Engage China, Not Contain It,” *Defense Issues*: Volume 10, Number 109, American Forces Information Service: Defense Viewpoint.

Gore and then-Chinese Premier Li Peng hosted the first session of the US-China Policy Forum on Environment and Development. The session was followed by two years of environmental cooperation programs and exchanges.¹⁰⁵ In October 1997, President Clinton and President Jiang signed the US-China Energy and Environment Cooperation Initiative, and they discussed its implementation when President Clinton visited China in June 1998. Among other things, they agreed to cooperate on improving air quality monitoring in China, and to hold several forums on energy, development, and US investment in China. They also signed several environment-related contracts between US companies and Chinese entities.¹⁰⁶

Within months, however, US-China relations became embroiled in allegations of Chinese nuclear espionage at Los Alamos National Laboratory. The beginning of NATO bombing of Yugoslavia was strongly condemned by the Chinese, and put a damper in Chinese Premier Zhu Rongji's trip to the US in April 1999 to discuss trade relations. Although no consensus was reached on China's entry into the World Trade Organization, one of the activities that was a success during Zhu's visit was the second session of the US-China Policy Forum on Environment and Development. The countries signed agreements to provide money to accelerate the sale of US environmental technology to China, to study market-based emissions trading, and to build a natural gas pipeline in China.¹⁰⁷ It is evident that programs are being implemented and both countries are succeeding in cooperating on the environment. The April 1999 forum was successful in spite of the tensions between the US and China. Environmental cooperation can weather these fluctuations in diplomatic relations. Even when relations are bad enough that nearly all contact is cut off (as was the case with Tiananmen Square), environmental cooperation resumes, and is more successful each time. The increasing number of programs set up between China and the US are a testament to this.

¹⁰⁵ Chinese Embassy to the US Website: <http://www.china-embassy.org/Cgi-Bin/Press.pl?envprotect>, "China, US to Continue to Work for Environment Protection," April 9, 1999.

¹⁰⁶ USIA Website: <http://www.usia.gov/regional/ea/uschina/prcfact1.htm>, "Fact Sheet: Achievements of U.S.-China Summit," The White House: Office of the Press Secretary Beijing, June 27, 1998.

¹⁰⁷ Department of State Website: http://www.state.gov/www/regions/eap/990409_us-china_enviro.html, "Vice President Gore and Premier Zhu Rongji Announce Environmental Agreements at U.S.-China Policy Forum on Environment Development," The White House: Office of the Vice President, April 9, 1999.

3. Public and Private Investment in China's Economy

Bilateral environmental programs foster opportunities for public and private investors to get involved in China's economy. Thus, in addition to improving confidence, environmental engagement has tangible economic benefits for both the US and China. This, ironically, is the silver lining to China's environmental problems. As China seeks to clean up its environment, it must seek out foreign technology and investment. This need has created growing market opportunities for private US companies, and other opportunities to get involved for agencies such as the Environmental Protection Agency and the Import-Export Bank. By investing in environmental technologies for China, US companies benefit from increased sales and markets, and the Chinese benefit from a healthier environment. A better environment reverses the onerous drag on the economy, which is caused directly by environmental pollution and degradation.¹⁰⁸ As a result, the economic growth rate increases, stability can be better maintained, and the Chinese government is able to invest more money in environmental technology and other US goods.

The aforementioned pipeline deal is a prime example of healthy US investment in China. A statement released by the Office of the Vice President reads,

In an agreement that paves the way for the first-ever foreign investment in an on-shore natural gas pipeline in China, Enron Corporation signed a Memorandum of Understanding on a natural Gas Pipeline Project with China National Petroleum Corporation for the joint development of a natural gas pipeline in south central China. This pipeline would represent an important piece of China's natural gas infrastructure and help offer a cleaner alternative to fossil fuels.¹⁰⁹

Enron, an American green energy company, is one of many companies taking advantage of the expanding market. The outlook is optimistic, and companies are eager to take part. In the past few years, the Chinese market for environmental technologies and products has reached \$4 billion, and experts estimate that from 1995 to 2004, China will require \$100 billion of investment in water resources to combat pollution and deal with scarcity.¹¹⁰ The ability of environmental protection to enhance economic growth is well documented. *The China Daily* reported in May of 1999 that the environmental protection industry has been growing by leaps and bounds in Jiangsu Province, one of China's

¹⁰⁸ Economy (1998), p. 39.

¹⁰⁹ Ibid.

¹¹⁰ Economy (1999), p. 15.

coastal provinces. This region is home to about 1500 environmental technology companies. In total, these companies put out \$964 million in products, and make \$120 million in profits. The industry has proven to be a powerhouse for Jiangsu's growth.¹¹¹

Public-private sector collaboration is also possible. The air quality monitoring project that emerged from the June 1998 summit has been implemented through US public and private organizations. China's State Environmental Protection Agency (SEPA) bought \$5 million worth of air quality assessment equipment from Dasibi Environmental Corporation, a US firm. This equipment has been installed in 11 cities across China.¹¹² In March 1999, when EPA administrator Carol Browner visited China, she inspected the air quality project in Xi'an.¹¹³ Browner and her Chinese counterparts also discussed implementing twelve other programs in China, all designed to enhance environmental cooperation.¹¹⁴ Both Browner's visit in itself, and the Dasibi project, stand as examples that cooperation does not necessarily have to be solely on the level of summit visits by heads of state. Furthermore, both public and private investment enhance trade relations between China and the US, one of the central tenets of US China policy. Environmental investment is less prone to concerns about compromising national security than the aerospace and computer industries, for example. Most of the technology used in environmental cleanup is not classified, and China's use of this technology benefits the global environment as well. Trust between the two countries is increased, Chinese desire for US goods goes up markedly, and US companies are able to establish themselves in a huge market.

Moreover, investment in China has proven to be incredibly resilient, if not impervious to fluctuations in US-China relations. While the Chinese government was condemning the NATO bombing of its embassy in Belgrade, it continued to encourage US companies to set up factories and sell their products,¹¹⁵ and investment continued unabated even as US-China relations were at their lowest point since relations were established. Environmental programs with elements of private investment may give more

¹¹¹ *China Daily*, "Environmental efforts open way for investors" 5/12/99 . China Daily Website.
<http://www.chinadaily.com.cn/cndydb/1999/05/d3-3env.e12.html>.

¹¹² Zhu Baoxia. "Environmental Collaboration to the reinforced." *China Daily*. 3/19/99.
<http://www.chinadaily.com.cn/cndydb/1999/03/d2-1envi.c19.html>

¹¹³ *Ibid*.

¹¹⁴ Zhu Baoxia. "Environmental co-operation crucial." *China Daily*. 3/23/99.
<http://www.chinadaily.com.cn/cndydb/1999/03/d1-3envi.c23.html>.

¹¹⁵ Muzi Lateline News: <http://dailynews.muzi.net/cgi/lateline/news?p=30180&l=english>, "U.S.-China Trade Presses on Despite Rows," May 23, 1999.

flexibility to projects in that they are less sensitive to shifts in government funding or policy.

C. THE HUMAN RIGHTS ANALOGY

Environmental issues can contribute to the diplomacy between countries, much as other peripheral issues do, and while some peripheral issues have a positive effect, others have a negative impact. The human rights debate has been a negative force in relations between China and the US. An analysis of our country's approach to China's human rights problems is useful in examining the potential effects of a coherent environmental policy toward China, particularly with regard to the chances of success and the potential for danger. Like human rights, the environment is a peripheral issue in the US and China's foreign policies. Human rights clearly has had an important impact on US-China relations, but whereas human rights has undermined relations, the environment can be a venue for strengthening ties.

1. Lack of Centrality in US Foreign Relations

Pressing for greater human rights in China is one of the main planks of US China policy,¹¹⁶ but human rights lacks centrality in foreign policy in that it is not a cause for major permanent shifts in American policy toward China. Since the establishment of US-China relations in 1979, trade with China has steadily increased. Every year, Congress has renewed Most Favored Nation (MFN), now Normal Trade Relations (NTR) status to allow relatively free trade with China. When the Chinese government cracked down on democracy protests in Tiananmen Square in June of 1989, the US immediately imposed a number of sanctions, including cessation of all military sales and high-level diplomatic exchanges.¹¹⁷ But MFN status continued to be renewed, secret high-level consultations between US and Chinese officials began soon afterward, and the majority of the sanctions were lifted by 1992.¹¹⁸ The policy of engagement simply does not allow the US to completely and permanently cut off contact with China over human rights.

¹¹⁶ Department of State Website. Harold Hongju Koh. "On-the-record briefing on U.S.-China Human Rights Dialogue" Washington, DC, January 13, 1999.
http://www.state.gov/www/policy_remarks/1999/990113_koh_humrts_china.html

¹¹⁷ Kim, Samuel S. ed., *China and the World: Chinese Foreign Relations in the Post-Cold War Era*. 3rd Edition. James D. Seymour. "Human Rights in Chinese Foreign Relations." Westview Press. Boulder, Colorado: 1994. p. 208.

¹¹⁸ Ibid.

In the same way, the environment is not central enough to the goals of US China policy to warrant a severe disruption in trade with China, and has not prompted any administration to permanently change the tenor of US-China relations. Although it is frequently a topic of discussion between US and Chinese officials, it has yet to sway US-China relations one way or another.

2. Affront to US Values

China's human rights violations are an affront to the values that many Americans hold dear. Not only is China's government authoritarian, but its perceived lack of rule of law, civil rights, religious freedom, or freedom of speech to name a few, galls many Americans raised on the principles of the Constitution and the Declaration of Independence. Because of this, China's human rights problems have become a major issue in the debate over US China policy, and a China policy dominated by human rights has become the rallying cry for many people.¹¹⁹ At times, this criticism has attracted particularly eloquent rhetoric on both sides.¹²⁰

This is not the case with the environment. Although China's pollution and other environmental issues are distasteful to many Americans, their democratic sensibilities are not offended. That is, China's environment is not perceived as a challenge to Americans' way of life. While this may encourage apathy, it also opens the way for creative solutions to environmental security issues without the massive political fights and controversies that human rights discussions entail.

3. Self-Interest

The Chinese government is greatly concerned with remaining in power, and any perceived challenges to its rule are dealt with severely. The human rights movement, freedom of speech and basically the ability to question government positions are all viewed as threats, and thus the government refuses to make any concessions until it is "in firm control domestically."¹²¹ As a result, human rights talks have been bogged down, and they broke down completely after the NATO bombing of the Chinese embassy in

¹¹⁹ Pelosi, Nancy. "Statement on the President's Request for Most Favored Nation (MFN) Trade Status for China" June 3, 1998. Congresswoman Nancy Pelosi's Website.
<http://www.house.gov/pelosi/prmf.htm>.

¹²⁰ Rosenthal, A.M., "The March of Folly" *The New York Times*, July 30, 1999,
<http://www.nytimes.com/library/opinion/rosenthal/073099rose.html>.

¹²¹ Economy (1999), p. 14.

Belgrade.¹²² The Chinese government still views any organized (or even unorganized) political dissent as not in its self-interest. The US government's declared self-interest is in promoting human rights in China, and here they clash. So far, no compromise has been reached.

Unlike human rights, both countries perceive protection of the environment as being in their self-interest. China realizes that its environment is deteriorating rapidly, and the US is ready to help it fight pollution, deforestation, and other environmental ills with technologies, exchanges, and the like. A beneficial side effect of China's realization about its environment is the stark realism of the situation. China knows that it does not have enough money to combat the problem entirely on its own, nor does the government have the resources to research every possibility. An acknowledgment of this is the Chinese government's permission of relatively unfettered public discussion on environmental protection to foster new ideas. In addition, unofficial NGOs are allowed to work to clean up the environment at the grassroots level, albeit with restrictions in place.¹²³ On the whole, China does not perceive these activities as threats because they are in line with the official government view.

4. The Ability to Undermine US-China Relations

Although human rights lacks a central position in the cold, hard calculus of US-China policy, it is important enough to throw a serious damper on US-China relations when China cracks down. The ramifications of a crackdown have the potential to spread to the trade and security aspects of the relationship. Human rights considerations for a long time were one of the main sticking points in China's bid to become a member of the World Trade Organization. The Tiananmen Square incident was too blatant for the US to ignore or pave over. Not only did the Bush administration cut off all high-level diplomatic relations and military exchanges, it also halted financing of Chinese development projects by the Overseas Private Investment Corporation (OPIC) and the Trade Development Program, and requested that international lending institutions do the same.¹²⁴ China responded by essentially halting most scholarly exchanges with the US. It expelled Voice of America (VoA) correspondents from Beijing, jammed VoA broadcasts, suspended a program for social science research, stopped Chinese citizens from

¹²² Laris, Michael and Steve Mufson. "End of Port Calls Hurts China Ties." *Washington Post*, May 22, 1999, p. A13.

¹²³ Economy (1999), p. 15.

¹²⁴ Harding, Henry. *A Fragile Relationship*. Brookings Institution. Washington, DC. 1992, p. 225-226

participating in American-funded programs, and gradually restricted Chinese student study in the US.¹²⁵ It was several years before relations were back up to speed again. Clearly the human rights problems in China have effects which include not only the political arena, but almost every aspect of the US-China relationship.

5. The Lessons Learned

To date, environmental issues have caused no widespread ruptures, but this could change. Human rights is a peripheral issue, but has had a strong negative impact on US-China relations. Similarly, as China's environmental problems grow, the US interests in China's environment, as outlined in this paper, grow commensurately. As a result, the environment has the potential to affect relations, but unlike human rights, there are two paths the US and China can take.

The environment could hinder relations, becoming an obstacle to US-China cooperation. For example, disagreement over China's contribution to greenhouse gas emissions could balloon into bigger conflicts over the nature of China's impact on the global environment. But the environment could also serve as a vehicle for enhancing relations. Unhindered by inherently opposed goals and values, the US and China can establish positive interaction by sharing information and acting to protect the environment. This is the path the US should pursue. By doing so, it can forestall problems similar to those caused by human rights, and increase trust between the two countries.

¹²⁵ Ibid., p. 235-239.

II. US-CHINA MILITARY-ENVIRONMENTAL COOPERATION

Environmental exchange between the US and China could be in the form of military-to-military environmental programs. The National Security Study Group, a commission chartered by the Pentagon, recently assessed the national security environment that the United States will likely encounter in the first quarter of the 21st century. On East Asia, this commission deemed that China is the focus of greatest security concern for states in the region. China is a major military power with strong ground and air capability, many dozens of strategic nuclear weapons, and regional power projection assets. The future is uncertain with respect to the role of China in the regional and global security environment. The future role of the People's Liberation Army (PLA) in China's government is also unknown, as it is in a period of modernization and restructuring.¹²⁶ In this time of transition, it is particularly important to engage China as a means to influence their actions in a way that advances US values and interests. As part of this effort, the Department of Defense should establish a relationship with the PLA in order to build confidence, lessen tensions over strategic issues, and promote stability in areas of mutual importance.¹²⁷

The DoD and China's PLA have been involved in several programs of cooperation, including high-level security dialogues, joint humanitarian rescue exercises, and other information exchanges. Military environmental cooperation as an additional form of exchange makes good sense. According to former Secretary of Defense William J. Perry,

There is a great benefit when militaries of the world do their part to protect and preserve their environments. There is greater benefit when they do this by working together. Not only are we making the world a cleaner and safer place, we are also bridging old chasms and building new security relationships based on trust, cooperation and warmth. That makes the world a more peaceful place.¹²⁸

For the DoD and PLA, first, the environmental knowledge gained through a cooperative program would yield operational and logistical benefits; second, a program of

¹²⁶ National Security Study Group (The Hart-Rudman Commission), "East Asia" Pre-Decision Draft, March 29, 1999.

¹²⁷ Sirak, Michael C., "DoD Official Says US-China Focus Should Be 'Strategic Reassurance'", *Inside the Pentagon*, Vol. 15, No. 26, July 1, 1999, p. 16.

¹²⁸ Kozaryn, Linda D., "Environmental Protection Key to Readiness", DefenseLink website: www.defenselink.mil/new/Nov1996/n11221996_9611223.html, p. 1.

environmental cooperation would indirectly help each side reach broader organizational and national goals; and finally, there would be positive impacts on DoD-PLA and US-China relations.

Part I. Benefits of Sharing Environmental Knowledge

A. MILITARY AND ENVIRONMENTAL BENEFITS

Military activities and interests and the environment are linked in several ways, and incorporating environmental considerations into systems, operations, and planning is wise for the DoD and PLA. Former Defense Secretary Perry stated that,

Environmental protection is critical to military readiness and to military quality of life... The Defense Department must have an environmental program that protects our troops and families; that manages our training and living areas carefully; that fulfills our obligation to be good citizens to the community in which we live; and that sets good example to militaries around the world.¹²⁹

Military operations often inflict environmental damage that in the long run requires costly mitigation, such as remediation of hazardous waste sites on military bases. Likewise, environmental problems can indirectly affect military operations and draw on military resources. For instance, humanitarian aid and peacekeeping efforts resulting from environmental catastrophes could become the responsibility of military organizations, particularly as the problems grow in scale and intensity. In extreme cases, only the military may have the means to respond. Knowing this, military organizations can gain much from preemptively incorporating environmental considerations into military plans and objectives. Environmental concepts should also be included in the acquisition process. For example, environmental technologies and design will yield benefits such as improving vehicular efficiency and saving fuel costs. The DoD and PLA should share knowledge about how environmental considerations can be incorporated into military planning and operations, for the sake of the environment and for military efficiency.

Military activities, from everyday operations to full-blown warfare, affect the environment. In daily activities, the DoD manages large tracts of land for testing and training. It operates industrial complexes on many installations, uses hazardous materials, and consumes vast quantities of fuel. These activities can cause severe damage to the

¹²⁹ Ibid., p. 2.

environment. In the past, the improper handling of hazardous materials "caused serious degradation of rivers, groundwater and coastal waters, killing wildlife, destroying vegetation, polluting sources of drinking waters, and causing illnesses."¹³⁰ Warfare causes more obvious environmental damage. The recent NATO bombings in Serbia demolished oil refineries, petrochemical plants, and other industrial factories housing hazardous materials. Tons of chemicals and other toxic materials were burned or released into the soil and water. Now, months later, extreme environmental and health problems continue to plague the bombed areas. In the town of Pancevo, the vegetables, fish, and drinking water are contaminated and unsafe to eat, and many people are suffering from inexplicable ailments. The seriousness of the problem prompted the United Nations Environment Program to form a Balkans Task Force to send a team of international experts to Pancevo and other damaged industrial sites to assess the environmental damage.¹³¹ The findings will be reported in September 1999.

Just as military operations have environmental impacts, so too environmental problems bear on military activities. According to Senator James Inhofe, chair of the Armed Services Subcommittee on Military Readiness, environmental issues affect the quality of life, military training, and readiness of our military facilities.¹³² The military is called upon for natural disaster relief after hurricanes and other environmental catastrophes, particularly in situations where only they have the requisite airlift, supplies, or other resources to help. The 1998 flooding in China is just one example of many.

Furthermore, if environmental problems cause or exacerbate existing economic and social problems, the military will become involved where national interests are at stake. Environmental problems can create conditions of economic and political instability which affect US national interests and historically have triggered DoD involvement. For example, it is probable that somewhere where US interests lie, desolate environmental conditions resulting from global climate change will cause economic disruption, mass migrations, and other problems that breed conflict and instability. The US will respond in situations where there is a perceived threat to our critical security interests. In situations posing a less immediate threat, according to the 1996 National Security Strategy:

¹³⁰ NATO Committee on the Challenges of Modern Society, Joint Sweden-US Project, "Environmental Guidelines for the Military Sector", June 1996, p. 8.

¹³¹ Hedges, Chris, "Serbian Town Bombed by NATO Fears Effects of Toxic Chemicals", *New York Times*, July 14, 1999.

¹³² Goodman, Sherri W., "DoD Role/Contribution/Comparative Strengths/Future Plans", from Wilson Center Meeting Notes, *Environmental Change and Security Project*, The Woodrow Wilson School, Issue 4, Spring 1998, p. 100.

Our military engagement must be targeted selectively on those areas that most affect our national interests—for instance, areas where we have a sizable economic stake or commitments to allies and areas where there is a potential to generate substantial refugee flows into our nation or our allies’.¹³³

Instabilities that threaten US access to markets and products, such as in the Middle East, will trigger US military involvement. Refugee problems arising from problems near US borders, such as Haiti, will also likely prompt DoD intervention.¹³⁴ Environmental degradation can create or contribute to these types of problems and thus indirectly involve the US military.

Given the many links between the military sector and the environment, it makes sense for military organizations to incorporate environmental issues into the planning and budgeting processes. They should proactively evaluate the role that the environment will play in national security and be prepared to deal with the potential consequences, as this will improve response effectiveness and help prevent unexpected emergency requirements that encroach on other military resources. The DoD has been working with other US government agencies “to improve understanding of... potential [environmental] causes of conflict and instability and to create mechanisms to provide adequate warning of future crises.”¹³⁵ Although the DoD has institutionalized several environmental programs, it is still in the early stages of incorporating environmental considerations into its strategic planning and objectives, and on this front there is still much to do and learn. China is much further behind in this regard. Local civilian governments contend with internal problems caused by environmental degradation, but seemingly only in a reactive manner. The national government, let alone the military, does very little strategic planning for environmental problems, if any.

In contrast, the DoD has taken many steps to improve its own environmental performance, including reductions in hazardous waste pollution, development of better cleanup tools, and a stronger commitment to environmental enhancement. For example, the DoD now incorporates environmental considerations in the acquisition process. Decisions made today about weapon systems design and maintenance procedures can impact the environment 20 to 30 years into the future.¹³⁶ Innovative environmental

¹³³ “National Security Strategy of Engagement and Enlargement,” The White House, 1996, p. 18.

¹³⁴ Personal interview with Dr. Victor Utgoff, Expert on military forces, operations research/economics, Institute for Defense Analyses, June 26, 1998.

¹³⁵ DoD Environmental Security Office website, www.dtic.mil/execsec/adr97/chap14.htm, p. 2.

¹³⁶ *Ibid.*, p. 3.

technologies and management approaches, energy efficient design, and environmental-based engineering are among the measures that, besides benefiting the environment, can improve military operations and logistics and save costs.

Prevention of environmental pollution and damage should be favored over remediation, which can be more costly in the long run. For example, about 80 percent of DoD's hazardous materials generation is tied to weapons systems production, maintenance, and disposal. There have been attempts to eliminate or reduce the use of hazardous materials within the acquisition process for both new and existing systems, rather than concentrating on ways to transport and dispose the waste safely. This will lower overall compliance and cleanup costs for the DoD.¹³⁷ The Air Force substituted a more environmentally-friendly and maintenance-free nickel cadmium battery system into the B-52 fleet, which improved the uptime and will avoid \$70 million in expenses over 20 years.¹³⁸

Aircraft and vehicles should be designed to maximize energy efficiency—not only does this reduce carbon dioxide emissions, but also logistically it allows for less frequent refueling, which saves time and money. Fuel constitutes 70 percent of the bulk tonnage supplied to US military forces, and by improving fuel economy, operations and infrastructure become lighter and more flexible. Recognizing this, the US Army's goal is to reduce fuel usage by 75 percent by the year 2020.¹³⁹ Other environmental technologies that the DoD is developing or acquiring include advanced sensors for detecting environmental contaminants, new soil and water treatment techniques, detection and remediation technologies for unexploded ordnance, and biodegradable packaging materials. Appendix A lists the DoD's main environmental activities. The PLA could benefit by leveraging these types of environmental technologies and considerations in its operations.

B. OTHER ORGANIZATIONAL BENEFITS OF ENVIRONMENTAL ENGAGEMENT

Environmental engagement between the DoD and PLA will indirectly help each party achieve other objectives besides the direct improvements to the environment and

¹³⁷ Ibid.

¹³⁸ Ibid.

¹³⁹ Notes from Defense Science Board Science Study, Environmental Technologies, Institute for Defense Analyses, Summer 1999.

military efficiency. These will be benefits of a more political nature, specific to the goals of each military organization and country.

Because of the less controversial nature of environmental engagement, it is a good venue for setting concrete goals, which is the basis for building a stronger relationship, a stated objective of both the PLA and DoD. Countries that have been engaging in military-to-military cooperation are discouraged with programs that have no tangible objective, and would rather tackle problems with visible and measurable outcomes.¹⁴⁰ Delegation exchanges between the PLA and DoD often discuss high-level security problems on a philosophical level, rarely having a focused objective that both sides can jointly work to achieve and benefit from as an organization.¹⁴¹ US Pacific Command commander-in-chief Joseph Prueher said that, “US armed forces want to develop an understanding with China by ‘moving our military relationship beyond the very senior policy, foreign affairs and protocol channels and into more routine operational channels.’”¹⁴² Sharing knowledge about cost-saving environmental measures not only would be operationally useful, but also would provide participants a sense of accomplishment. Environmental programs with measurable objectives would require much more interaction and tend to produce strong ties between participants. If both organizations derive benefits from these programs, there will be more reason and effort to continue cooperation.

With respect to the PLA’s objectives, environmental engagement would provide the opportunity to obtain new technologies, and achieve status and prestige.¹⁴³ It has been shown in other US-China programs that in order for the Chinese to embrace this type of program, there needs to be interest and some payoff or gain, often in the form of technology transfer or investment. For the PLA, besides the direct tangible benefits, there is an additional motive for cooperation—modernization. Prior to 1989, the working level contacts between the US and China may have been instrumental in professionalizing the military, according to some US officials.¹⁴⁴ Today, the PLA is continuing in its efforts to modernize, become more professional, rid itself of corruption, and elevate its image. To accomplish this, it has reduced its forces, fought for and gained an increase in budget, and

¹⁴⁰ Personal interview with Mrs. Susan Clark-Sestak, environmental security expert, Institute for Defense Analyses, July 9, 1999.

¹⁴¹ Personal interview with Dr. Ming Zhang, PLA expert, July 8, 1999.

¹⁴² Inside China Today website, <http://www.insidechina.com/china/news/02.html>, “Washington: Sino-US Military Ties Robust”, December 4, 1998, p. 1.

¹⁴³ Interview with Randy Shriver, former Office of Secretary of Defense country chair for service, OSD, JCS contacts with China, July 1, 1999.

¹⁴⁴ General Accounting Office Report, “National Security: Impact of China’s Military Modernization in the Pacific Region, GAO/NSIAD-95-84, June 6, 1995, p.8.

changed its military doctrine.¹⁴⁵ In addition, the Central Military Commission is in the process of closing down the PLA's commercial activities, a major source of smuggling and corruption, not to mention poor military discipline.¹⁴⁶ Currently, the PLA is a strong technological organization within China, but it hopes to become even more advanced.¹⁴⁷ Leveraging environmental technologies that are cost-saving, and becoming involved in agreements and associations with other professional militaries, would strengthen the PLA's modernization efforts. Also, according to China environmental expert Changhua Wu, the Chinese would prefer to get technologies from the US if possible because they are considered to be the best.¹⁴⁸

For the DoD, environmental cooperation with the PLA would help with transparency and access. According to Defense Department spokesman Kenneth Bacon, military exchanges are part of the Clinton administration's goal of "developing transparency between the two armies."¹⁴⁹ Transparency aids in achieving operational insights into the PLA that may assist in clarifying intentions and cutting the chances of mis-cues during periodic downturns in relations.^{150,151} It also serves to build confidence and trust between organizations. Through environmental exchanges, the DoD might gain knowledge about the status of the PLA's efforts to modernize and better anticipate the PLA's future role in China's government. Furthermore, interaction at all levels is valuable in building organizational ties and can help DoD achieve its military objectives, such as limiting proliferation of weapons of mass destruction, and maintaining peace in the Asia-Pacific region. General Anthony Zinni, Commander-in-Chief for the Central Command, recently stated that the personal relationships between DoD and Pakistani military leaders have been critical as the US attempts to mediate the India-Pakistan fighting in Kashmir.¹⁵²

¹⁴⁵ Ibid., p.4.

¹⁴⁶ South China Morning Post website, "PLA Chief Accepts \$47B Yuan Payout", <http://www.scmp.com>, October 9, 1998

¹⁴⁷ Zhang (1999).

¹⁴⁸ Wu (1999).

¹⁴⁹ Broder, Jonathan, <http://www.msnbc.com/news/251444.asp>, "US-China Military Ties Expanding, Army Officials Angered by Planned Visits of Chinese Officers", March 18, 1999, p. 3.

¹⁵⁰ General Accounting Office Report, "National Security: Impact of China's Military Modernization in the Pacific Region, GAO/NSIAD-95-84, June 6, 1995, p. 6.

¹⁵¹ Inside China Today website, www.insidechina.com, "US-China Military Keep Ties on Even Keel", March 10, 1999, p. 2.

¹⁵² Lecture by General Anthony Zinni, CINC CentCom, July 28, 1999.

C. NATIONAL STRATEGIC BENEFITS OF ENVIRONMENTAL ENGAGEMENT

Military-to-military environmental cooperation between the DoD and PLA should be viewed by both parties as an opportunity for constructive engagement and confidence-building that will enhance the prospects of cooperation and peace between Washington and Beijing.¹⁵³ According to Stanley Roth, Assistant Secretary for East Asian and Pacific Affairs for the Department of State,

Persistent, principled, and purposeful engagement with China's leaders and China's people enables us to identify and work towards shared goals. As a result of our engagement we have been able to persuade China to work with us on an increasing number of important issues, some of which had previously been contentious such as South Asia, the Persian Gulf, and nuclear non-proliferation. China is acting on the basis of its self-interest, but we are helping to define that interest in ways that complement US objectives.¹⁵⁴

Military exchanges on the environment would serve as an area of mutual interest with emphasis on cooperation rather than conflict. Constructive environmental action can be taken with less controversy than pertains to other existing channels of engagement. For years, exchanges between the PLA and DoD, including visits to military schools, lectures, and lab-to-lab exchanges, have been occurring regularly. Some of the talks have focused on shared interests, but more often the dialogue is dominated by issues of conflict and controversy. Greater attention should be given to areas of agreement and willing cooperation, and the environment is a good venue for this. That DoD-PLA talks focus on fundamental security issues, many of which are controversial, is to be expected. The US-Japan security alliance, US arms sales to Taiwan, and China's poor adherence to international treaties are among the many obstacles in US-China relations that need to be addressed.¹⁵⁵

However, considering the underlying suspicions surrounding the national security objectives of each side, any opportunity to improve relations and find common ground should be embraced by both countries and their defense institutions.

¹⁵³ Broder (1999), p. 1.

¹⁵⁴ Roth, Stanley O., Assistant Secretary for East Asian and Pacific Affairs, "Renewal of Normal Trade Relations with China", Testimony before the House Ways and Means Committee, Subcommittee on Trade, June 8, 1999.

¹⁵⁵ Zhang (1999).

A Chinese white paper on national defense, released in July 1998, made clear China's negative opinion on the United States' military presence in the region. Implicitly referring to the US, it argued that, "hegemonism and power politics remain the main threats to world peace and stability; that a Cold War mentality still prevails; and that the enlargement of military blocs and strengthening of alliances has added instability to international security."¹⁵⁶ This paper preceded the NATO bombing of the Chinese embassy in Belgrade, an incident that clearly reinforced these ideas in the minds of the Chinese. China believes that the US is trying to contain it, not only economically but also militarily.¹⁵⁷ Likewise, the US is wary of China's military objectives in Taiwan, Tibet, and other disputed territories. Also, according to the 1998 Strategic Assessment, "There is concern that as China's comprehensive national strength increases, Beijing will challenge US regional and global leadership."¹⁵⁸ Needless to say, US-China relations are strained over strategic and military objectives.

But even with these problems, neither side wishes to see overall relations deteriorate.¹⁵⁹ The statements of several American and Chinese government leaders attest to this. President Clinton recently said that we should engage China purposefully rather than confront or contain it, "to encourage the right kind of development,... to help China grow at home into a strong, prosperous and open society,... and to integrate China into the institutions that promote global norms on proliferation, trade, the environment, and human rights."¹⁶⁰ Guangkai Xiong, deputy chief of the general staff of the PLA, stated that, "China and the United States are now determined to develop common security interests while discussing political differences."¹⁶¹ Defense Secretary Bill Cohen believes that, "If we treat China as an enemy today, we are guaranteed an enemy for the future."¹⁶² It is in neither party's interest for the US and China to be enemies and, at the very least, the countries should maintain areas of commonality. In the realm of environmental cooperation, the PLA and DoD can build lasting ties. The number of PLA officers

¹⁵⁶ Gill (1999), p. 70.

¹⁵⁷ Roberts, Brad, *Trip Report Notes on Shanghai Symposium organized by the Chinese Academy of Social Sciences*, 2/14-21, 1998.

¹⁵⁸ National Defense University, *Strategic Assessment 1998: Engaging Power for Peace*, US Government Printing Office, p. 43.

¹⁵⁹ National Defense University (1998), p. 43.

¹⁶⁰ Inside China Today website, www.insidechina.com, "Clinton's Foreign Policy Address On China", April 7, 1999, p.5-6.

¹⁶¹ Bian, Hongwei, China Daily website, <http://www.chinadaily.com.cn/cndydb/1999/01/d4-1mil.a07.html>, "Military Co-operation Spurs Stability", p. 1.

¹⁶² Ibid., p. 2.

holding high offices in the Chinese civilian government is now the highest since 1977. Almost a quarter of the Communist Party's Central Committee members consists of PLA officers.¹⁶³ The personal ties established with PLA officers through environmental exchanges would indirectly have an influence on the civilian government, aiding in the development of overall US-China relations.

Although the military-to-military relationship is subordinate to overall relations between Beijing and Washington, compared to other areas of engagement, environmental programs might better endure fluctuations in US-China policy because the subject matter tends to be less contentious than other topics. So, whereas military ties are often the first to go and swing wildly with political shifts, the environment could be less sensitive to these changes. Relations between the US and China have recently turned sour, but only a year ago, ties were very strong. During his visit to the US in September 1998, General Zhang Wannian stated that he had come to make concrete arrangements for enhancing our military relationship, and that the two countries have strong common interest in and potential for developing bilateral relations.¹⁶⁴ In contrast, a year later and since the Chinese embassy bombing, China has cut off all military contacts.

But generally speaking, these breaks in relations have been temporary and resume once progress is made in diplomatic, political, and economic areas. In fact, according to Kurt Campbell, Deputy Assistant Secretary of Defense for Asian and Pacific affairs, lower-level Chinese military officials indicate that they are now anxious to resume dialogue with the DoD.¹⁶⁵ Overall relations are warming up again, and the resumption of talks is pending authorization from Chinese leaders. The September meeting between President Clinton and President Jiang Zemin in New Zealand marked an improvement in ties.¹⁶⁶ Military relations are expected to withstand the recent diplomatic shocks.

Even if all military dialogue is cut off, environmental cooperation is a good starting point from which to resume relations. Campbell stated that during periods when there is remarkably little dialogue between the PLA and DoD, it is especially important

¹⁶³ Shambaugh, David, "China's Military in Transition: Politics, Professionalism, Procurement and Power Projection", *China's Military in Transition*, Clarendon Press (Oxford: 1997), p. 5.

¹⁶⁴ China Daily website, <http://www.chinadaily.com.cn.cndydb/1998/09/d1-2.i17.html>, "Sino-US Ties Important, Military Exchange Enhanced", September 1998.

¹⁶⁵ Sirak (1999), p. 16.

¹⁶⁶ Pomfret, John, "China Relaxes Its Stance," *The New York Times*, September 5, 1999, p. A25.

for the parties to pursue confidence-building measures such as the less heated maritime agreement.¹⁶⁷ Environmental programs would aid in this respect.

Another strategic benefit that would indirectly come from PLA-DoD environmental exchanges has to do with the competing roles of the US and China in the Asia-Pacific region. The US military presence there has an important balancing and leadership function that has been and remains crucial to maintaining order. At the same time, China has been challenging the United States' regional position by fortifying and displaying its military strength, and attempting to build separate regional security frameworks. Thus, the relationship that the US has with China also affects the security situation in the entire Asia-Pacific region. Dialogue between the militaries enhances the overall stability of the region. According to Campbell, Asian countries feel most at ease, "when US-China dialogue is characterized by a degree of 'comity' and commitment—a balanced relationship that is not overly agreeable, but not overly antagonistic either."¹⁶⁸

D. LESSONS LEARNED FROM PAST EXCHANGES

Examining the successes and failures of cooperative programs between the US and China is instructive, and illuminates the benefits of engagement. Historically, the relationship between the DoD and PLA has been limited in scope; however what contact there has been has yielded positive results. In addition to helping the PLA's modernization effort, US-China working-level contacts before 1989 may have been instrumental in gaining China's support on a number of issues. During this period, China muted its protests over arms sales to Taiwan, restrained from selling Silkworm missiles to Iran during the Gulf tanker operations, and cooperated with the United States on Afghanistan.¹⁶⁹ More recently, both the US and China have been concerned about the problems that may arise from the failure of the North Korean state, such as refugee flows and the use of weapons of mass destruction.¹⁷⁰ In order to improve the prospects for a stable and peaceful future on the Korean peninsula, the US and China have combined their assistance efforts, working with the Korean governments individually and mediating talks between the two Koreas. They were partners in convincing North Korea to freeze plutonium production and for now, to refrain from missile tests. On both sides, the

¹⁶⁷ Ibid., p. 16.

¹⁶⁸ Ibid., p. 17.

¹⁶⁹ General Accounting Office Report, "National Security: Impact of China's Military Modernization in the Pacific Region, GAO/NSIAD-95-84, June 6, 1995, p. 8.

¹⁷⁰ National Defense University (1998), p. 51.

incentives for this cooperation are practical, stemming from the “hard, cold, strategic logic that these are issues that profoundly affect the peace and stability in Asia.”¹⁷¹ But in addition, the joint effort has indirectly furthered country relations, and it is often invoked as an example of successful partnering.

To help prevent unfriendly incidents from snowballing into conflict, military contacts between the US and PLA have increased steadily in recent years.¹⁷² Earlier this year, the schedule of military contacts planned for 1999 was the most ambitious since the pre-Tiananmen Square period. Besides high-profile visits by leaders, a common component of military exchanges, this plan included joint training exercises involving humanitarian aid and natural disaster relief, and sharing of battlefield medicine and flight safety techniques.¹⁷³

The Department of Defense has been involved in many bilateral and multilateral environmental initiatives with the militaries of other countries. Activities include memoranda of agreement on environmental protection, pilot studies on environmental management and the reuse of former military lands, and technology transfers. Since 1995, the DoD and the Norwegian and Russian Ministries of Defense have worked together on the Arctic Military Environmental Cooperation (AMEC), a program that deals with the management of radioactive and chemical waste that is dumped in Arctic waters as a result of military activities. The AMEC projects include the development of containers for interim storage of spent nuclear fuel, technologies for radioactive waste treatment, and methods of military base cleanup in the Arctic.

Starting in 1996, through NATO’s Committee on the Challenges of Modern Society (CCMS), the DoD has been involved in several Black Sea projects with Russia, Turkey, Ukraine, and others. One of these projects is to construct and implement a Black Sea Observation and Forecasting System (BSOFS). The Black Sea is important to the US from a tactical perspective. Because it is situated between Turkey and the former Eastern Bloc countries of Bulgaria, Romania, Ukraine, and Russia, the US Navy presence there supports our national security objectives. Environmentally speaking, the Black Sea is a unique ecosystem, but it is in severe deterioration and anthropogenic activities must be

¹⁷¹ Sirak (1999), p. 17.

¹⁷² Inside China Today website, www.insidechina.com, “US-China Military Keep Ties on Even Keel,” March 10, 1999, p.2.

¹⁷³ MSN website, www.msn.com, “US-China Military Ties Expanding, Army Officials Angered by Planned Visits of Chinese Officers”, p.3.

managed carefully. The BSOFS will be used to monitor the ecosystem variability of the Black Sea and predict the effects of contaminants.¹⁷⁴

The United States' Commanders in Chief (CINCs) tout the environment as a constructive way to establish relations with other countries.¹⁷⁵ CINCCENTCOM General Anthony Zinni described great successes and positive implications of ongoing environmental cooperation with Middle Eastern countries. There, DoD has been engaging governments and militaries on environmental security issues (e.g., water source management, water shortages due to El Nino, La Nina); protection of natural resources (e.g., halting overfishing of fisheries, working with Coast Guard); and humanitarian aid, peacekeeping, and disaster relief training. These have been meaningful areas of cooperation because Middle Eastern countries care strongly about environmental problems, which pose a serious threat to their livelihoods. Thus, they welcome and appreciate any outside help. General Zinni believes that this type of engagement has been useful in encouraging long-term strategic thinking and developing a stable and strong military, which is important for a country's long-term overall stability.¹⁷⁶

Besides those countries already mentioned, DoD has also collaborated with Sweden, Poland, Canada, and Australia on environmental issues. Appendix B provides a list and short description of the DoD's international initiatives. All in all, DoD's environmental exchanges with other militaries have been fruitful for the parties involved, and in some cases for other military organizations as well. A joint project between the DoD and Sweden's military produced a handbook on environmental guidelines for the military sector, which "has been shared with many militaries around the world, helping develop environmental programs in the military."¹⁷⁷ Deputy Undersecretary of Defense for Environmental Security Ms. Sherri Goodman's assessment is that, "our activities [of global engagement on the environment] show great promise in fostering international security and regional stability."¹⁷⁸

¹⁷⁴ NATO Committee on the Challenges of Modern Society, "Black Sea Observation and Forecasting System Science Plan", Report No. 221, September 1997, p. 10.

¹⁷⁵ Clark-Sestak (1999).

¹⁷⁶ Talk by General Anthony Zinni, CINC CentCom, IDA, July 28, 1999.

¹⁷⁷ Wilson Center Meeting General Discussion, *Environmental Change and Security Project*, The Woodrow Wilson School, Issue 4, Spring 1998, p. 104.

¹⁷⁸ Goodman (1998), p. 101.

Part II. Potential Difficulties for Environmental Engagement

A host of political, economic and cultural obstacles can render less effective environmental engagements between the US and China, and between DoD and PLA in particular. China has a number of issues and characteristics that could derail environmental cooperation, but the US has problems to face as well. The environment is as complex as are other diplomatic issues and, just as for these other issues, there needs to be a comprehensive and consistent framework for engagement, bolstered with realistic expectations about the positions of the US and China.¹⁷⁹ Elizabeth Economy says that, “China’s environmental problems offer a unique opportunity for the US to cooperate with China on a vital issue,” but only “if fully understood and thoughtfully addressed.”¹⁸⁰ It is essential not to lose sight of the fact that environmental cooperation will face many obstacles, and it is not a panacea for all troughs in the US-China relationship. Both sides need a solid dose of realism in their respective policies.

A. CHINA’S SUSPICIONS OF ECONOMIC CONTAINMENT

China has a nagging suspicion that all the talk about protecting China’s environment is merely a way for the West to arrest China’s economic growth: in a sense, that the West is trying to hold China back from competing on par with the developed world. In a typical example, Chinese spokesmen have lambasted Lester Brown’s criticisms of the government’s food policies as “merely a further example of the West’s reluctance to come to terms with China’s rising power.”¹⁸¹ The Chinese tend to see foreign criticism of their policies as really being criticism of China’s rightful place in the world. This is especially true in international environmental forums that focus on such issues as global warming. Although China is one of the main contributors to greenhouse gases, it has shown little concern with participating in alleviating global climate change concerns, partially because it maintains that today’s problems are being caused by the past pollution practices of more advanced nations.¹⁸² This apathy could even acquire a slightly sinister tone. Expanding the logic a bit, China could even think of US encouragement of environmental protection as a further means of containment.

¹⁷⁹ Gill (1999), p. 65-66.

¹⁸⁰ Economy (1999), p. 14.

¹⁸¹ Dupont (1998), p. 46.

¹⁸² Economy (1998), p. 43.

Given that this may be a possible Chinese attitude, the US should structure all cooperative programs with China as mutually beneficial. It should not press China merely on international environmental issues, but it also address its domestic problems on a much greater scale. China must perceive that the cooperation is not merely a vehicle for condescending US aid. The US should stress that it has much to learn from China in terms of the environment (different methods of attacking a problem, for instance), and that together the participants can work out solutions to the problems at hand. Moreover, as President Clinton noted in a foreign policy speech on China, there exist technologies that can clean up the environment without sacrificing economic growth.¹⁸³ There is no need to sacrifice one for the other. Essentially, at no time should the Chinese think that the ulterior motive of environmental cooperation is retarding its economic growth or to make it reliant on the United States.

B. CATASTROPHIC SETBACKS IN US-CHINA RELATIONS

In US-China relations, there is always the chance of a crisis severe enough that it may sever relations completely, at least for a time. This could involve a PRC attack on Taiwan, hostilities in the Spratlys, or another freak accident like the Belgrade bombing. In this case, all cooperation with China could be cut off, including environmental, and particularly military-to-military cooperation. Indications are that the Clinton administration wants to maintain ties with China and continue to strengthen our economic and political relationship, but this definitely should not be taken as given. To prepare for the possibility of a breakdown in communications, the US should attempt to forge cooperative ties with China on the environment in the present. Should the US-China relationship break down, and then resume, the ties can resume as well. Experts believe that high-level environmental cooperation can be restarted relatively quickly, compared to other forms of cooperation. They expect environmental cooperation to resume in three to four months, possibly in a year after a trough in relations like the Belgrade bombing. Lower-level functional exchanges, such as sharing specific information to clean up a site, or exchanging medical research results about pollution's effect on people's health, would be less affected.¹⁸⁴

¹⁸³ "Clinton's Foreign Policy Address." *Inside China Today*. Inside China Today Website, <http://www.insidechina.com/special/sinous/speech.php3>.

¹⁸⁴ Wu (1999).

C. CHINA'S LACK OF TRANSPARENCY

Historically, the PLA has been an organization which is inherently secretive, nontransparent, and acculturated to value secrecy in military affairs for its own sake;¹⁸⁵ it is much less willing to share information with the US military than the US is with China, and prefers a slower approach rather than a crash course in military-to-military relations.¹⁸⁶ As a result, many programs have enjoyed only limited success because the Chinese are wary of showing their American counterparts what they consider classified material, even though the US is more pliant in this area. For example, although Chinese officials regularly visit the US, the Chinese are extremely hesitant to allow Americans to visit Chinese war colleges, for fear of exposing their doctrine or strategies.¹⁸⁷ The Chinese do not want to give any advantage to a foreign government that they believe has the ability and the willingness to subvert their own regime with democratic ideas.

The Chinese are also suspicious of too much contact with Americans as being subversive to the Chinese system, or encouraging “peaceful evolution,” a code word for democracy. They are wary of any American influence in this area, and this state of mind is especially strong in the military. The PLA is the guardian of the current system, and any ‘corruption’ of high-level (or even mid-level) PLA members might have destabilizing consequences. However intransigent it might seem, the PLA would be responsive to cooperation which would allow active interaction but minimize exposure of large numbers of PLA officers to American “bourgeois liberalism.”¹⁸⁸

Those who have interacted with the Chinese admit that this reticence can be frustrating at times. The asymmetrical flow of information stunts cooperation and makes both Americans and Chinese suspicious of each other. Much of the problem comes also from the Chinese idea of deterrence. Whereas American deterrence doctrine emphasizes a large show of force to frighten the opponent, China depends on secrecy. Opponents are constantly left wondering exactly what the Chinese capabilities and motivations are. At times, the Chinese even present themselves as weaker than they really are. Historically, the PLA has turned down joint military exercises for fear the US would discover its true strength.¹⁸⁹

¹⁸⁵ Ibid.

¹⁸⁶ Ibid.

¹⁸⁷ Wilborn, Thomas L. “Security Cooperation with China: Analysis and a Proposal,” Part III. November 25, 1994. US Army War College Strategic Studies Institute p. 16. US Army War College Strategic Studies Institute Website: <http://carlisle-www.army.mil/usassi/ssipubs/pubs94/coopchna/coopchna.pdf>

¹⁸⁸ Wilborn (1994), p. 16.

¹⁸⁹ Shriver (1999).

There is some cause for hope in the area of transparency. Although China still zealously protects many aspects of its military from US delegations, much information has been released to the public, and it is available widely in the media devoted to military affairs.¹⁹⁰ However, much of the information that might be directly pertinent to national security in China's eyes is released only on a tactical basis. For example, in July 1999, China revealed that it had neutron bomb capabilities, allegedly to counter US claims of Chinese nuclear espionage, and tacitly threaten Taiwan after an announced revision in its "one China, two entities" policy.¹⁹¹

From the start, it is important to establish that cooperation on substantive projects of mutual benefit will be done without compromising national security. The programs should start conservatively. Initial cooperative measures might involve publicized joint exercises in cleaning up toxic waste spills on military bases or some other sort of environmental rescue effort that is less delicate from a security standpoint. More aggressive and far-reaching environmental programs could follow, once a stronger feeling of trust is rooted.

D. CHINA'S EXCUSES

Although it has taken a number of steps to curb its environmental degradation, in many respects China has not fully owned up to its responsibility, and its responses have often been inadequate and half-hearted at best. Environmental cooperation programs that call on China to invest a lot of money or resources run into two main excuses.

The first excuse that China makes is that it is going through the "smokestack" stage of development, in which the country is industrializing with heavy, polluting industries (such as steel and chemicals). It argues that every developed country once went through this phase, and now China needs to go through it also in its development period. In fact, it is entitled to pollute. But as enumerated earlier in this paper, China cannot afford to go through the "smokestack" period from an environmental security standpoint; its environmental problems are already too big for the rest of the world to ignore.¹⁹²

¹⁹⁰ Zhang (1999).

¹⁹¹ Faison, Seth. "China Proclaims It Designed Its Own Neutron Bomb" *The New York Times*. July 15, 1999. The New York Times Website. <http://www.nytimes.com/library/world/asia/071599china-neutron.html>.

¹⁹² "China Choking: Beijing needs to fight pollution – earnestly and urgently" *Asiaweek*, March 5, 1999. Asiaweek Website. <http://www.pathfinder.com/asiaweek/99/0305/ed2.html>.

China's second excuse is common among many developing countries—that it is simply too poor to pay for environmental programs.¹⁹³ While it is true that China devotes more of its GDP towards environmental protection than does any other developing country, it is still not nearly enough to stand in place, let alone gain ground in the fight against environmental degradation.¹⁹⁴ But the costs of doing something now are small compared to cleaning up the mess later;¹⁹⁵ China must realize at every step of the way that prevention is nearly always better than fixing the problem after it has occurred.¹⁹⁶ It must strive to achieve long-term goals by setting realistic short-term goals and expectations. Most importantly, China must understand that the time for excuses is over, and that the environment is not going to clean up itself.

E. CHINA'S PRIORITIES

Ultimately, one of major obstacles to effective environmental cooperation is the ranking of China's priorities. While halting environmental degradation is important to the Chinese, economic growth is the highest priority by far. *Asiaweek* notes that as far as development is concerned, "no price is too high,"¹⁹⁷ and Elizabeth Economy says even the most ardent Chinese environmentalists "tacitly concede the primacy of economic imperatives in policymaking."¹⁹⁸ As far as the military is concerned, with all of its modernization efforts, it has other things to be worried about besides the environment.¹⁹⁹ In an ironic twist, China's leaders see anything that may hinder economic growth as threatening the stability of their regime. Right now the formula for success seems to be working, and nothing must stand in its way. Hence any large-scale environmental protection programs, inasmuch as they may cut down on job growth or production, are weakened. Because China views economic growth as a matter of national security, there is little the US can do other than work around the issue.

What little the US can do is grounded in how it reacts to the other difficulties confronting US-China environmental cooperation. It must allay China's fears of containment, approach China as a partner not a patron, and make clear the ramifications

¹⁹³ Ibid.

¹⁹⁴ Economy (1998) p. 42.

¹⁹⁵ *Asiaweek* (1999).

¹⁹⁶ Ibid.

¹⁹⁷ Ibid.

¹⁹⁸ Economy (1998) p. 42.

¹⁹⁹ Zhang (1999).

of not pursuing sustainable development. In this way, what little influence the US has over China's priorities can be leveraged.

F. FLUCTUATIONS IN INTERNAL DOMESTIC POLITICS

In the US, political opposition to engagement with China is largely attributable to rampant partisan politics throughout the government. On one side are those who view China as a great threat to our economic and strategic security, in short, an enemy to the US. They are suspicious of China's intentions with respect to trade and military strategy, and are concerned about China's poor human rights record. These leaders advocate a containment policy, to cut off all ties. On the other side are those who concede that China is a growing superpower, but believe that we should approach China in a less antagonistic manner, engaging it in order to achieve our strategic goals. Fueling the arguments of the opponents of engagement with China are events such as the recent allegations of Chinese theft of US nuclear secrets. This prompted a host of criticisms against engagement and in particular, technology transfer. In recent years, the group opposing engagement with China is not large enough to defeat major measures that are ultimately seen as being in the US interest, such as NTR, but they can make cooperation difficult.

The extent of environmental cooperation and the viability of US-led initiatives are also heavily dependent on the policymakers within a particular administration. Although the current Clinton administration favors environmental cooperation and engagement with China, and therefore environmental programs have been resilient, the future of environmental cooperation with China (or with any other country) relies on the politics of the administration. The administration in five to ten years' time could be the one that decides to cut off cooperation completely, or to expand the programs. Environmental cooperation with China is not one of the higher items on the agenda, and should relations get any chillier or the budget any tighter, it might be one of the first programs to be cut.²⁰⁰ There is a high level of uncertainty involved.

There is particularly strong controversy surrounding military-to-military engagement because of the strategic implications. Some Pentagon officials and members of Congress oppose any form of exchange because it will cause damage to our national security. One expert states that the Chinese military:

²⁰⁰ Clark-Sestak (1999).

Follows a documented doctrine of deception, under which it uses the appearance of cooperation with the US to secure American technology and modernize its forces. China's goal... is not a strategic partnership with the US but to grow strong enough to challenge US military predominance in the Pacific.²⁰¹

Pentagon officials, commenting on military exchanges, say that the White House and DoD are "shoving it down our throat." It is true that with respect to technology transfer, the US must take great care not to strengthen the PLA's power projection capability—this would not only run counter to US interests but also to the interests of China's neighbors who feel threatened. However, if the United States' goal is to try to influence China's actions with respect to Taiwan, the Korean peninsula, and other areas of US interest, there needs to be a basis from which to form a relationship and create opportunities for constructive dialogue. If we shut off all military ties, relations between the militaries and countries will only get worse. In the long run, engaging China, not shunning it, will be more effective. The environment is an opportunity that should not be taken for granted because it is one of the few areas in military affairs that can be jointly studied by the DoD-PLA with clear boundaries that do not compromise the security of either side. According to Assistant Secretary Roth,

We have an opportunity to influence the course of China's development in the next century, and so we should take advantage of it... This year, there are tough problems in our bilateral relationship with China. Nonetheless, continued engagement with China is the best path... A clear-eyed strategy of principled purposeful engagement with China remains the best way to advance US interests.²⁰²

With respect to technology transfer sensitivities, the effective response would be better security rather than shutting off dialogue.

The ongoing China debate among US leaders has led to inconsistencies in our China policies, which is confusing not only to the Chinese but also to Americans. The US needs to resolve the appearance of a divided stance towards China. China is frustrated by the conflicting signals coming out of Washington: at one moment, the US is conciliatory and eager to restart talks on issues like China's entry into the World Trade Organization; the next moment, we are calling on China to clean up its deplorable human rights record.

²⁰¹ MSN website, www.msn.com, "US-China Military Ties Expanding, Army Officials Angered by Planned Visits of Chinese Officers," p. 3.

²⁰² Roth, Stanley O., Assistant Secretary for East Asian and Pacific Affairs, "Renewal of Normal Trade Relations with China", Testimony before the House Ways and Means Committee, Subcommittee on Trade, June 8, 1999.

Different sections of the government often espouse contradictory China policies. The State Department and the White House persist in conciliatory engagement, while members of Congress and the Pentagon are adamantly opposed to engagement with China. All parties are guilty of theatrics, and the political infighting leaves China suspicious of US intentions. A coherent policy is required, one which China can use to accurately predict a US response to its actions, and the US government can use to avoid the American public perception that "policy changes are the result of economic incentives or 'pandering' to Chinese interests."^{203, 204}

Domestic politics on China's side can also affect US-Sino relations and the ability to set up and implement productive bilateral programs. For example, according to Lieberthal, political reforms in China have produced problems in national level organizations that intrude on the Sino-US relationship. The PLA's effort to re-establish itself professionally was a driver for the large-scale military exercises in Taiwan in March 1996. The show of force was ultimately crafted to intimidate Taiwan, but the PLA had other motives as well: using it as a basis for increasing the PLA budget, raising military morale, and providing justification for maintaining a large military force. The PLA leadership convinced the civilian leadership to back this effort. "The same mobilization, of course, brought Sino-US relations to their nadir."²⁰⁵ PLA pressure, based on internal organizational goals, played a significant role in this incident that strongly affected relations with the US. In describing the domestic pressures that leaders face, Lieberthal states that, "Each side believes that its own internal constraints are so clear that the other side must understand them, yet each side discounts or ignores the other leaders' internal constraints because they are so difficult to understand with certainty."²⁰⁶ This contributes to mutual distrust about motives and actions.

G. LACK OF MONETARY COMMITMENT

Both the US and China enjoy signing cooperative agreements and exchanging high-minded statements about the need to clean up the environment, but often the money for functional environmental cooperation programs is just not allocated. The US provides

²⁰³ "China Analyst: Sino-US Relations on Track." *Inside China*, Inside China Website.
<http://www.insidechina.com/>.

²⁰⁴ Frank (1998), p. 69.

²⁰⁵ Lieberthal, Kenneth. "Domestic Forces and Sino-U.S. Relations" Ezra Vogel (ed) *Living with China*, (New York, W.W. Norton & Co.: 1997) p. 269

²⁰⁶ Ibid.

little if any funding for current programs, and in many cases both countries feel uncomfortable using money to support their rhetoric.²⁰⁷ China is quite happy to accept money from the US. When Premier Zhu Rongji visited the US in April 1999, he intimated that China would be comfortable accepting preferred rate loans for environmental projects.²⁰⁸ But with budgetary pressures, it is unlikely the US will earmark a good deal more money to environmental security, especially if it appears that the money is merely going towards righting China's own mess. China has also shown signs of discontinuing environmental programs when the foreign aid money for them runs out, demonstrating a conspicuous lack of monetary commitment to the environment.²⁰⁹ This is certainly a problem in the short-term, and could adversely affect environmental cooperation relations in the long-term.

It is possible that as the environmental crisis deepens and destabilizes China, the US will wake up to the threat that it poses to US interests and US-China relations. Ultimately, the US must make funding environmental cooperation a higher priority in its engagement policy because of its own interests in China and East Asia.

Part III. Recommendations for Military-to-Military Environmental Exchanges

The difficulties that environmental engagement faces can be addressed directly through careful construction and management of joint programs. Military engagement should not be viewed as a policy objective in itself; rather, it should be a process for setting and achieving well-defined, realistic goals between parties. There must be strong reasons for engagement, and joint programs should be structured so that each organization has foreseeable gain and an important stake in success. Often, China's bilateral environmental programs consist of high-level dialogue on broad ideals rather than specific activities for making actual substantive environmental improvements. What should happen in principle is different from what happens in reality. These DoD-PLA military environmental exchanges must be carefully formulated with an outline of activities and objectives that result in noticeable change. In the long run, participants will gain a better sense of satisfaction at the completion of the program.

Military-to-military programs are more productive and sustainable if there is an agreed framework that explicitly states the overall purpose of the engagement and gives a

²⁰⁷ Clark-Sestak (1999).

²⁰⁸ Ibid.

²⁰⁹ Economy (1998), p. 43.

roadmap of activities. Bates Gill believes that relations with China depend on two factors, both of which have been lacking: a clear understanding with China about the two countries' strategic interests and differences, and a domestic consensus in support of those understandings.²¹⁰ Each side should be aware of its own reasons for engaging and these should also be transparent to the other party. Ideally, the countries should seek areas of mutual importance and shared objectives for cooperation so that the incentives of both sides are aligned. This is particularly true for military environmental agreements since the environment is not a core military interest. The environmental benefits to be gained from military environmental cooperation should be explicitly identified in the framework of cooperation.

The DoD and PLA took this first step of constructing a framework of military environmental engagement in September 1998. Secretary of Defense Bill Cohen and PLA Vice Chairman of the Central Military Commission General Zhang Wannian signed a "Joint Statement on the Exchange of Information by the Chinese Ministry of National Defense and the United States Department of Defense on Military Environmental Protection," agreeing to study military environmental protection and exchange relevant information through technical representative groups.²¹¹ In signing the Memorandum of Understanding (MOU), both sides recognized "the importance of the military's role in environmental protection, including monitoring the environment and eliminating the threat posed to the nations by environmental degradation."²¹² With the overarching framework already in place, once the recent lapse in diplomacy is overcome, environmental programs can move forward. The DoD's existing environmental projects, described in Appendix A, are useful points of departure for engagement. Recommended below are some possible military environmental activities that the PLA and DoD could conduct together.

- *Exchange of information on responding to environmental crises.* Both the DoD and PLA have been involved in responding to homeland environmental crises and could share their experiences and knowledge. For example, the PLA's role building dams and diverting waters during the 1998 floods in China resembled that of the Army Corps of Engineers during floods in the United States. The engineering and

²¹⁰ Gill (1999), p. 65.

²¹¹ China Daily website, <http://www.chinadaily.com.cn/ndydb/1998/09/d1-2.i17.html>, "Sino-US Ties Important, Military Exchange Enhanced", September 1998.

²¹² Ibid.

management techniques for dealing with environmental disasters, such as earthquakes and storms, are transferable. The Army Corps of Engineers has the technical expertise to advise state and federal officials on the environmental damage, inspecting and assessing the affected areas and helping to plan courses of action. This military organization could advise the PLA on how to develop this capability within its ranks.

- *Joint studies on the impacts of environmental problems on national security and how to prevent or prepare for them in the military.* It would serve both the PLA and DoD to anticipate the impacts of environmental problems on national security and the subsequent impacts on military resources and operations. The political and social instabilities that may arise from natural disasters or environmental degradation are issues that should be examined in advance and incorporated into military planning and training. A collaborative effort between the PLA and DoD would make strides in this underdeveloped area of study in military environmental programs. The PLA and DoD together could find ways to predict the effects of environmental problems on the military, and whether involvement in operations outside of combat training affects military readiness. They could jointly develop preparation guidelines in planning, programming, and budgeting, such as making funds and military personnel readily available when needed for environmental-related emergencies. To be prepared operationally, the militaries could develop and conduct joint exercises to train for small-scale contingencies that would result from environmental catastrophes.²¹³

The DoD and PLA could collectively address the effects of such environmental problems as global climate change (GCC), which both countries are likely to face. Already, Chinese and American universities, government organizations, and private companies are cooperating on GCC. It is a natural area of cooperation because the United States and China share the responsibility of being the world's top greenhouse gas polluters. Under GCC, both countries could be hit hard with extreme weather conditions, severe drought, and other destabilizing situations that might create the need for military assistance or intervention.

²¹³ Before the Chinese embassy bombing, there were plans for the PLA and DoD to cooperate on humanitarian assistance and natural disasters, including joint sandtable (staff) exercises. These plans were halted with the cut-off in military ties.

- *Joint studies on the impacts of military activities on the environment and how to reduce/mitigate the effects.* Both militaries should make every attempt to minimize and mitigate the environmental impacts of their activities. Besides the obvious environmental benefits, this will also set an example for other sectors and other countries to follow. The existing environmental MOU between the DoD and the PLA focuses heavily on this area of cooperation. It proposes that the parties review and investigate processes and models used to analyze the environmental impacts of military activities. The DoD and PLA might try to develop new models that could be used generically by other countries' military organizations.

The MOU also suggests that there be dialogue on the environmental management of training areas, hazardous waste management, and other military environmental protection policies and programs. The DoD has more experience and knowledge than the PLA in these areas; it has embarked on several environmental projects, incorporating environmental considerations into military programs and the management of military territories. Through the AMEC cooperation, the DoD has a great deal of experience in cleaning up former military bases and dumping grounds. The DoD procedures for cleaning up contaminated sites could be applied to PLA installations. In the Black Sea project, much scientific work was done on environmental monitoring, which would be helpful for China in assessing its damaged ecosystems, a crucial step in environmental cleanup. Besides just imparting information to the Chinese, the PLA and DoD could start from this experience base and combine expertise to further develop the state of environmental monitoring and cleanup technologies, as there is still a lot to be learned and accomplished.

- *Combined research on opportunities to enhance military efficiency and systems performance through environmental technologies and policy measures.* The US has already taken steps to integrate environmental technologies and features into military systems. This would be useful information for the Chinese, who are trying to cut costs and improve operational efficiency in the process of modernizing. The PLA is proud of its technologically-advanced status in China and is always looking to acquire new technologies. The DoD and PLA could try to develop new technologies which, for instance, improve energy efficiency in military facilities and operations, or reduce or clean up the hazardous waste generated by military activities. Reducing the environmental impacts of new military systems would entail changes to the

acquisition process, including adding environmental impact as a factor alongside system performance and cost. The DoD and PLA participants could devise ways to effect this change in acquisition policy, since it would almost certainly face political and bureaucratic resistance.

They could also work together to formulate policy measures that would accomplish similar objectives as technological solutions, but for less cost. For instance, rather than developing and implementing fuel-saving technologies, any energy savings that can be realized simply by changing energy use patterns should be identified and included in doctrine. Since the allegations of Chinese espionage on the US nuclear program, technology transfer with the Chinese has become a controversial issue. But as long as there is careful management of such exchanges and there is no dual-use potential for the technologies being transferred or jointly developed, these transactions can be a meaningful dimension of US-Sino military environmental exchanges.

- *Joint humanitarian aid exercises.* In the case of unification between North and South Korea, there is a strong possibility that the PLA and DoD would be called in to jointly keep peace and provide humanitarian aid.²¹⁴ The 1999 National Security Study Group East Asia report established a baseline environment for the region through 2025, derived from a continuation of current trends, as a beginning point from which to analyze the range of future possibilities. Included in the assumptions is that North Korea, from an extremely weak economic position, agrees early in the next century to reunite with South Korea. The union is successful, but accompanied by social unrest and sporadic violence. This report states that “substantial international participation in humanitarian assistance and other support [is] a key element in the successful reunification.”²¹⁵ Joint humanitarian aid exercises would provide a good starting point in anticipation of this and other potential future missions between the PLA and DoD. Together, the DoD and PLA could conduct exercises simulating sea-rescue and assistance, food and supplies air-lift operations, medical aid and other military operations that are conducted in the aftermath of natural disasters and environmental crises. Before the recent suspension of military ties, the planned joint exercises tended

²¹⁴ Zhang (1999).

²¹⁵ “National Security Study Group East Asia Paper”, *Inside the Pentagon*, Vol. 15, No. 16, March 29, 1999, p. 13.

to focus on humanitarian aid, as this is a less controversial area of engagement where the PLA and DoD can pursue shared goals.

- *Work on environmental issues with civilians and other agencies.* The PLA could learn from the DoD's Base Realignment and Closure (BRAC) and Superfund domestic programs. These involve environmental restoration at active and former military installations that in many cases are located close to civilian populations. The DoD and the Department of Energy set up Restoration Advisory Boards (RABs) to elicit ongoing input from communities surrounding the contaminated sites. Opening up to civilian feedback would contribute to the public accountability and image of professionalism that the PLA seeks.

The environment is an area that is conducive to interagency work, and joint environmental programs could be expanded to include input from other government agencies. Naturally, environmental protection bodies could contribute a lot of first-hand knowledge to any military environmental activity. Energy organizations would provide expertise on hazardous waste removal and cleanup. Foreign relations agencies could become involved on the diplomatic side of DoD-PLA partnerships. Indeed, DoD has built formal partnerships with the United States' Environmental Protection Agency and the Departments of Energy and State to work with other militaries around the world on environmental issues.²¹⁶ In the US, these organizations seem eager to engage the Chinese, as their representatives have outwardly touted the benefits. Gaining support from other organizations would not only allow new resources and expertise to be leveraged in military environmental projects,²¹⁷ but would also give greater visibility to these joint ventures. Politically speaking, highly visible programs tend to be more resilient than less known ones. Also, the buildup of mutual trust between the DoD and PLA would extend to other branches of government, fostering more linkages and further strengthening overall US-China relations. Both the DoD and PLA should make every effort to involve other Chinese and US government agencies in environmental cooperation and cause the programs to grow.

²¹⁶ Ibid.

²¹⁷ Goodman (1998), p. 100.

III. CONCLUSIONS

Environmental engagement will not change China's priorities with respect to the environment. Nor will it alone transform the US and China into allies. However, what can be expected of environmental cooperation is an improvement in China's environmental practices and an elevation in US-China relations. The level of success depends on many factors.

Military and non-military environmental engagements must be fashioned in a way that garners sustained support, and satisfies the concerns of those who feel that engaging China will actually threaten our national security. The relationship should be constructed to be win-win, one that will yield obvious benefits for both sides so that it is sustainable, even through volatile periods. Simultaneously, there should be controls in place on information and technology transfer so as not to risk security problems.

Another key element is open communications about the domestic issues that affect policy and engagement on each side, so that environmental programs do not necessarily have to be sacrificed during other unrelated diplomatic incidents. An overarching framework will help to ensure consistency in the cooperation. Symbolically, environmental programs might be halted over diplomatic downturns, but if these programs are achieving important strides in our relationship, then they will most likely resume soon after tensions ease.

By observing these guidelines, there is vast potential for environmental, economic, political, and strategic gain from environmental engagement between the US and China and their respective military organizations. The relationship that develops will facilitate future cooperation in other areas.

APPENDIX A. DEPARTMENT OF DEFENSE ENVIRONMENTAL ACTIVITIES²¹⁸

The DoD's environmental planning activities are guided by the National Environmental Policy Act (NEPA), which "requires that DoD consider the environmental impacts of major actions that may significantly affect the quality of the human environment."²¹⁹ The environmental planning strategy includes identifying opportunities, activities, or products that have significant impacts on the environment; finding alternatives, mitigation measures, or contingency plans; setting objectives and goals; and developing an action plan. Following are some of the DoD's environmental activities under NEPA principles.

- Pollution prevention policies, to reduce or eliminate hazardous materials generation from weapons systems, and minimize environmental contamination and degradation due to pollution from military installations. Activities include: reviewing military specifications and standards to ensure that they do not unnecessarily require the use of hazardous materials in production or operation of weapon systems; developing a commercial standard that provides a systematic process for managing hazardous materials over the life cycle of a weapon system; ensuring compliance of installations with environmental, safety and health laws.
- Environmental technology development, to prevent pollution at the source, achieve environmental compliance at less cost, and create better cleanup tools. Activities include: research and development for new monitoring, cleanup and conservation tools through the Environmental Security Technology Certification Program, Strategic Environmental Research and Development Program, and the Service components' research and development efforts; demonstration and validation of new environmental technologies to ensure that technologies can be successfully fielded and used.
- Land, air and water management programs, to conserve resources, ensure the sustainability of ecosystems within DoD territories, and protect access to land, air, and water. Activities include: planning and integrating military training, testing and other mission requirements with the condition of the land and the ability to support

²¹⁸ Derived from DoD Environmental Security website: www.dtic.mil/execsec/adr97/chap14.html, "Chapter 14, Environmental Security."

²¹⁹ 1998 Annual Report to Congress, *Defense Environmental Quality Program*, "Chapter VII Environmental Planning."

mission requirements through the Army's Integrated Training Area Management Program, Marines' Long-Term Ecological Trend Management Programs; funding the development of new forest management techniques through the DoD Sustainable Forest Management & Ecological Restoration Funding Program.

- Environmental cleanup, to restore the environment by removing hazardous wastes such as radioactive material and unexploded ordnance from contaminated active and former military installations. Activities include: ranking all contaminated sites in the US according to their relative risk to human health and the environment and providing guidance for closing sites when cleanup is complete through the DoD/Department of State Memorandum of Agreement program, established in 1990 under the Superfund Amendments and Reauthorization Act and Base Realignment and Closure (BRAC) programs; involving communities that surround contaminated installations in environmental restoration decisions through Restoration Advisory Boards; clearing DoD lands of unexploded ordnance for future non-military re-use.
- Natural disaster assistance, to help state and federal agencies respond to environmental disasters. Activities include: restoring damaged areas and providing humanitarian aid (Army Corps of Engineers).

APPENDIX B. DEPARTMENT OF DEFENSE INTERNATIONAL ENVIRONMENTAL INITIATIVES²²⁰

- Has signed bilateral Memoranda of Agreement on Environmental Protection with the militaries of Norway, Sweden, Poland and Russia.
- Since 1980, has participated in several NATO environmental efforts, including 10 NATO environmental multiyear studies. One of these projects, through the Committee on Challenges to Modern Society (CCMS) includes collecting and analyzing NATO members' national defense environmental expectations and requirements. The information can be used by the member nations to enhance their environmental awareness and performance while engaged in activities in another member country. The Black Sea project, developing environmental risk monitoring and assessment techniques, is also through the NATO CCMS.
- In 1998, held joint exercises with the Australian Ministry of Defense and the Canadian Ministry of National Defense in the environmentally sensitive area around the Great Barrier Reef. A major objective was to apply environmentally sound operating principles throughout planning and execution of this military exercise such that no damage would be caused, and access would remain open to this valuable military training area.
- In September 1996, signed Arctic Military Environmental Cooperation (AMEC) with Russia and Norway to work together on safe handling and storage of radioactive materials, proper disposal of contaminated materials, and exchange of information on risk assessments and cleanup technologies and methods, to ensure that their military activities do not harm the Arctic environment.
- In September 1996, along with Australia and Canada, and CINC Pacific Command, sponsored the first Asia-Pacific Defense Environmental Conference, attended by military and civilian officials from 30 nations and representatives of the environmental and engineering industries of the three sponsoring nations.
- In March 1996, jointly published with the Swedish military *Environmental Guidelines for the Military Sector*, a handbook used by other militaries to assist them in establishing or enhancing their environmental programs.

²²⁰ Derived from DoD Environmental Security website: w3.pnl.gov:2080/ces/dialogue/ww_5_f3.html, "Department of Defense/Environmental Security/International Activities."

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